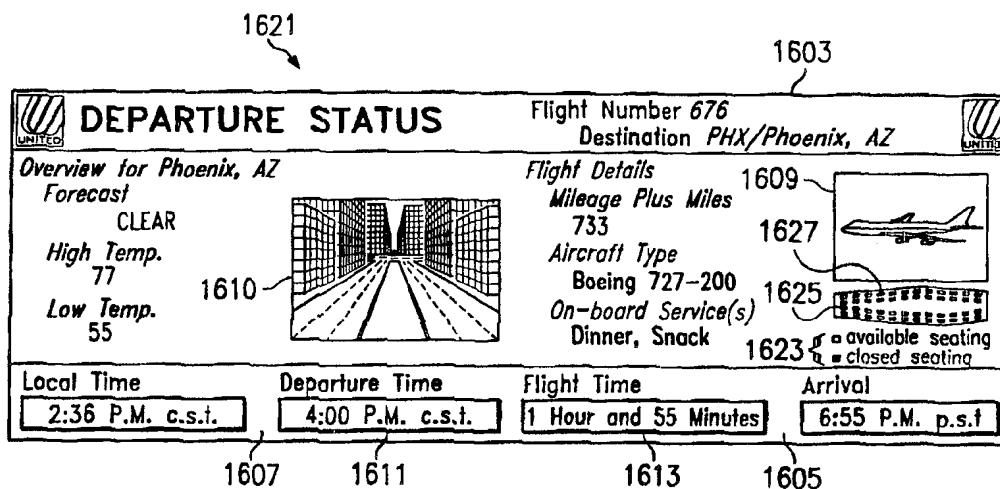




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(54) Title: CONTROL OF SERVER-ORIGINATED DYNAMIC DIGITAL SIGNAGE AT CLIENT SITE USING AUTOMATED DATA ACQUISITION



## (57) Abstract

Template multimedia presentations are assembled at a central location for a plurality of remote sites. The template multimedia presentations are transmitted to the remote sites over a wide area network, internet or the like, and are stored on players at their respective sites. The players automatically access an enterprise database to retrieve data useful for modification of the template multimedia presentation into a site-specific multimedia presentation, preferably at predetermined intervals. The result is a site-specific multimedia presentation incorporating changing enterprise data.

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**CONTROL OF SERVER-ORIGINATED DYNAMIC DIGITAL SIGNAGE AT  
CLIENT SITE USING AUTOMATED DATA ACQUISITION**

**CROSS REFERENCE TO RELATED APPLICATIONS**

This application is a continuation-in-part application of co-pending application for United States Letters Patent Serial No. 08/819,419, filed March 17, 1997 and entitled "Systems, Methods and Computer Program Products for Generating Digital Multimedia Store Displays and Menu Boards." That application is specifically incorporated herein by reference.

**TECHNICAL FIELD OF THE INVENTION**

This invention relates to information processing systems, methods and computer program products, and more particularly to digital multimedia presentation systems, methods and products adapted for use at multiple remote sites.

### **BACKGROUND OF THE INVENTION**

Information processing systems, methods and computer program products are being increasingly used in store and consumer-interface environments. For example, information processing systems may be used for inventory control, point-of-sale and accounting systems. Stores include wholesale and retail stores and other consumer environments such as offices, movie theaters, airports, shopping malls and arenas. Information processing systems continue to play an increasing role at multiple-site enterprises, such as "fast food" restaurant chains and airlines. Information processing control of distribution, promotion and other activities is increasingly being used to coordinate the large number of sites.

With the advent of the personal computer, multimedia presentations are also increasingly being used in commercial and consumer environments. Multimedia presentations may include text, graphics, audio and full motion digital video which are integrated into a single presentation.

Attempts have been made to use multimedia presentations in the store environment. See, for example, U.S. Patent 5,412,416 to Nemirofsky entitled "*Video Media Distribution Network Apparatus and Method*" and International Application WO 96/08113 to Cho et al. entitled "*Point of Purchase Video Distribution System*". See also the publication entitled "*POS Goes Multimedia: Retailers Test New Applications*" by Fox, Chain Store Age Executive, Vol. 71, No. 2, February, 1995, pp. 43-46. Notwithstanding these attempts, there continues to be a need for improved systems, methods and computer program products for generating multiple-site displays for enterprises.

### SUMMARY OF THE INVENTION

The present invention includes methods, systems and computer program products for generating multimedia presentations for a plurality of sites. Digital multimedia presentations are assembled at a central location for the plurality of sites and are transmitted to the plurality of sites. At each site, the received digital multimedia presentations are stored in digital multimedia players. The player automatically accesses a database, which may be remote from the site, to retrieve data useful for creating site-specific presentations. The sit-specific data are used to modify the stored received multimedia presentation to create a site-specific multimedia presentation, which is then displayed on a site display. Thus, digital networks and digital multimedia presentations are used to effectively generate digital multimedia site presentations in which a common presentation can be generated for many sites, and which as displayed are each customized to their respective sites.

According to a preferred embodiment of the invention, the database accessed by the player is assembled by or for the enterprise and contains data to which are attached various metatags, which identify the site (or group of sites) or other classifying characteristics, to which each data item pertains. The player only retrieves data items bearing a metatag that shows it should be retrieved to that player's site. The player may also incorporate conversion circuitry which converts the retrieved data to a form which is useful for modification of the stored received multimedia presentation. The stored received multimedia presentation may be a template having fields which are intended to be populated by the retrieved data.

Transmission may take place using a wide area network such as a wired wide area network, a wireless network or the internet. The digital multimedia presentation may be presented using a display which is a virtual display comprising a plurality of display devices arranged in an array. According to another aspect of the invention, customer inputs may be accepted to provide interactive digital multimedia presentations at the store.

**BRIEF DESCRIPTION OF THE DRAWINGS**

Figure 1 is an overall block diagram of systems, methods and computer program products for generating digital multimedia remote site displays and menu boards according to the invention.

5                    Figures 2A and 2B are flowcharts illustrating an operational overview of systems, methods and computer program products for generating site displays for a plurality of sites according to the present invention.

Figure 3 is a detailed block diagram of the control and monitoring station of Figure 1.

10                   Figure 4 illustrates an entity relationship conceptual model of the client and site database of Figure 1.

Figure 5 illustrates an entity relationship conceptual model of the presentation tracking database of Figure 3.

15                   Figures 6A and 6B illustrate examples of the wide area networks of Figure 1.

Figure 7 illustrates a local area network which may be used at the central location of Figure 1.

Figure 8 illustrates an example of an on-site local area network for Figure 1.

20                   Figure 9 is a block diagram of the on-site players of Figure 1.

Figure 10 is a block diagram of the on-site control and monitoring station of Figure 1.



Figure 11 illustrates a fast-food restaurant embodiment of the invention including a digital multimedia menu board.

Figure 12 illustrates a digital multimedia interactive kiosk according to the present invention.

5                   Figure 13 is a schematic block diagram of a further embodiment of the invention, in which a template digital multimedia presentation is sent to a plurality of remote sites and is modified at the site using automated data acquisition from an enterprise database.

10                   Figure 14 is a perspective view of a digital multimedia virtual display and associated hardware, as used at a remote site according to the embodiment shown in Figure 13.

Figure 15 is a schematic process flowchart showing different stages of receiving, modifying and displaying a digital multimedia presentation at a remote site.

15                   Figures 16a-16c are alternative representations of a virtual display formed by a digital multimedia presentation, showing different ways in which a template presentation may be modified with locally and automatically acquired data.

**DETAILED DESCRIPTION OF ILLUSTRATED EMBODIMENT**

The present invention now will be described more fully hereinafter with reference to the accompanying drawings, in which preferred embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like elements throughout.

**Overview**

Referring now to Figure 1, a system 100 may be used to distribute, manage, monitor and display digital multimedia presentations in store environments. The digital multimedia presentations may serve a promotional, operational, or “edutainment” (education/entertainment) function. By using digital multimedia presentations, the present invention can leverage the strengths of network distribution including rapid updating, improved process management, dynamic integration of multiple data sources and robust control over remote playback.

Promotional applications may include in-store marketing efforts which are targeted to motivate desired consumer behavior by increasing consumer awareness. For example, digital multimedia presentations may highlight product availability or specific in-store incentives to motivate product purchase. Operational presentations may include features which are central to the functioning of the store, for example a fast food restaurant menu board or airline boarding gate. Finally, edutainment applications may be used to provide computer-based activities to consumers or store personnel that are either educational or entertaining, or both. Examples include staff training, motivational

messaging or computer games. Regardless of the content, the digital multimedia presentations may be assembled, transmitted, received and played at the stores using the same software and hardware infrastructure, described below.

Accordingly, the present invention may be used to generate revenue,  
5 reduce costs, and/or increase consumer traffic. As a revenue generator, the promotional applications may create a new in-store medium that can be sponsored or cofunded by participating companies, similar to television advertisements. The operational applications can reduce the amount of materials and labor which are currently expended for the same tasks. Finally, the edutainment applications can form the basis for an in-  
10 store experience that motivates consumers to visit a given store or motivates staff retention and effectiveness.

It will be understood that the digital multimedia presentations may be passive or interactive. The digital multimedia presentations may respond to direct consumer input. For example, a promotional application can be presented on a touch-  
15 screen device which changes the type of information displayed in response to consumer selections.

As shown in Figure 1, system 100 includes an apparatus and a step for assembling, at a central location, digital multimedia presentations for a plurality of stores or sites. This apparatus or step is indicated in Figure 1 as "content development"  
20 102. Digital multimedia presentations which are developed are stored in a presentation database 104 at the central location and are staged for distribution through a distribution server 106 at the central location. Applications are distributed through a wide area network (WAN) 114 to on-site players 118; alternatively, the digital multimedia presentations may be sent from the distribution server 106 to a backbone web server

(not shown) for distribution over the internet. Information about the digital multimedia presentations in the stores may be transmitted back to the distribution server 106 where it is stored in a client and site database 110.

The digital multimedia presentations which are assembled during content development step 102 may include full motion digital video, still images, computer-generated animation, print prepress files, text and/or audio. The content is assembled into a complete digital multimedia presentation and stored in the presentation database 104. The details of assembling digital multimedia presentations will be described below. All approved digital multimedia presentations in the presentation database 104 are available for scheduling and transmission to the on-site players 118, as will be described in detail below.

The central control and monitoring station 108 enables a system operator to collect data from the client and site database 110 and the presentation database 104 in order to create digital multimedia presentation packages for each site. Digital multimedia presentation packages may be prepared for all sites, as templates for later on-site modification or otherwise, for a group of sites sharing common characteristics (such as the city or region in which the site is located), or a specific site. The digital multimedia presentation for each site may be, but does not have to be, determined in part by specific instructions or data from the various sites, which may be entered at the on-site control and monitoring station 116 and which is received and processed through the store administration server (central) 112. The central control and monitoring station 108 issues commands to distribute the assembled digital multimedia presentations from the presentation database 104 via the distribution server 106.

Digital multimedia presentations are distributed from the central location, to the plurality of stores, using a wide area network (WAN) 114. Thus, the blocks of Figure 1 to the left of WAN 114 are at a central location, whereas the blocks to the right of WAN 114 are at an individual site or store. It will be understood that the central location may include a plurality of discrete sites which act as distribution points for the stores. Similarly, the various components for the stores need not be physically located in the stores, except for the digital multimedia display of the on-site players 118. Rather, these components may be included at another location associated with the store. The distribution of the digital multimedia presentations from the central locations to the stores may be managed by a large multimedia file distribution program such as CreativePartner™, which is marketed by emotion Incorporated of Palo Alto, California.

At the stores, the digital multimedia presentations may be received, disassembled and stored in the on-site players 118. Client instructions or other on-site data such as point-of-sale information can be integrated into the digital multimedia presentations on the on-site players 118. The acquisition of on-site data may be automated, as will be particularly described in the embodiment shown in Figures 13-16c. Relevant data about the digital multimedia presentations and the state of the on-site players 118 may be recorded and transmitted to the distribution server 106. A system operator at the control and monitoring station 108 can view these data.

After a predetermined end date, the digital multimedia presentation is retired and replaced by another presentation which is delivered to the on-site player 118 as described above. Alternatively, a site-specific default presentation, which is always present on each on-site player 118, may be used. The default presentation is designed to be appropriate for on-site display at any time for a given enterprise.

The system 100 is preferably designed to allow most digital multimedia presentations to play without any action on the part of on-site personnel. However, there may be some functions for which it is useful to provide control and management tools to the store manager, such as selecting from among multiple implementations of a particular digital multimedia presentation, or setting the store prices, store hours or schedule for a particular store. This on-site customization may be obtained using the on-site control and monitoring station 116 and the store administration server 120, as will be described below.

#### Operational Overview

Referring now to Figures 2A and 2B, an operational overview of systems, methods and computer program products for generating store displays for a plurality of stores will be described.

As will be appreciated by one of skill in the art, the present invention may be embodied as a method, data processing system and/or computer program product. Accordingly, the present invention may take the form of an entirely hardware (hard-wired) embodiment, an entirely software-programmed and -configured embodiment or an embodiment combining software, firmware and hardware aspects. Furthermore, the present invention may take the form of a computer program product on a computer-readable storage medium having computer-readable program code embodied in the medium. Any suitable computer-readable medium may be used including hard disks, CD-ROMs, or other optical, magnetic or electronic storage devices. As embodied in a computer program product, separate media may be used to (a) program the computers at the central location and (b) program the players at the remote sites.

The present invention is described herein with reference to flowchart illustrations of methods, apparatus (systems) and computer program products. It will be understood that each block of the flowchart illustrations, and combinations of blocks in the flowchart illustrations, can be implemented by computer program instructions.

5 These computer program instructions may be loaded onto a computer or other programmable data processing apparatus to produce a machine, such that the instructions which execute on the computer or other programmable data processing apparatus create means for implementing the functions specified in the flowchart block or blocks. These computer program instructions may also be stored in a computer-  
10 readable memory that can direct a computer or other programmable data processing apparatus to function in a particular manner, such that the instructions stored in the computer-readable memory produce an article of manufacture including instruction means which implement the function specified in the flowchart block or blocks. The computer program instructions may also be loaded onto a computer or other  
15 programmable data processing apparatus to cause a series of operational steps to be performed on the computer or other programmable apparatus to produce a computer implemented process such that the instructions which execute on the computer or other programmable apparatus provide steps for implementing the functions specified in the flowchart block or blocks.

20 Referring further to Figures 2A and 2B, store displays 200 are generated by first developing or assembling generic digital multimedia presentations for multiple stores (Block 202). For example, when the store displays are menu boards for a restaurant chain, digital multimedia menu presentations including a menu of items which are sold at the restaurant and digital multimedia presentations such as advertisements for

selected ones of the menu items are generated. These digital multimedia presentations are generally developed by creative professionals at advertising agencies or clients. After a generic presentation is assembled, it is released to distribution and stored in the presentation database 104 of Figure 1 where it awaits assembly and distribution.

5                   At Block 204, the digital multimedia presentations are customized for individual stores or other sites. Customization may take place by generating for each (e.g.) restaurant site, a restaurant site-specific menu comprising selected ones of the items from the menu of items which are sold at the restaurant chain, the associated prices for the restaurant site, and restaurant-specific multimedia advertisements, to form  
10                   a customized digital multimedia menu board for each restaurant site including menu items offered at the restaurant site, the associated prices, and multimedia advertisements concerning the menu items.

                  It will be understood that customization may take place independent of store input. However, preferably, instructions or data gathered from the store sites may  
15                   impact the presentation customization at Block 204. Thus, in this embodiment presentations are preferably customized using the client and site database 110 at the control and monitoring station 108 (Figure 1). The data in the client and site database may be obtained from the store administration server 110 at the store via the store administration server at the central location 112. It will also be understood that  
20                   additional or alternative customization may take place at the stores or sites, as will be described below.

                  In addition to customization, at Block 206, start and end times and start and end dates are assigned for the customized multimedia presentations. The start and end dates may indicate start and end dates for a particular menu including special



products and/or prices. Start and end times may indicate when in the day a specific menu is displayed, for example breakfast, lunch and dinner menus and/or weekend or weekday menus.

At Block 208, a default digital multimedia presentation is also developed or generated. The default digital multimedia presentation preferably includes generic material for the site which may be displayed in the absence of a customized digital multimedia presentation. The failure to display a customized digital multimedia presentation may take place because of an error or because it is desired to display the default digital multimedia presentation.

At Block 212, the digital multimedia presentation packages are assembled for each store. At Block 214, the digital multimedia packages are queued for distribution to the individual stores using the distribution server 106 and wide area network 114 of Figure 1. At Block 216, the digital multimedia packages are transmitted over the WAN 114 and received at the store 216. The received customized digital multimedia presentations are stored at the associated store at Block 218.

At Block 222, further customization may be applied to the presentation at the site. In particular, the on-site store administration server 120 of Figure 1 may be used to provide further customization of the digital multimedia presentation. For example, the playing hours may be modified and prices may be changed. If alternative digital multimedia presentations are stored, one may be selected for presentation at the store. It will be understood that central customization and on-site customization may be used to optimize overall network resources and efficiency. It will also be understood that on-site customization may occur dynamically as the digital multimedia program is played.

Referring to Blocks 226-248, the customized digital multimedia presentations are then automatically played on the on-site player, such as a digital multimedia menu board at the associated restaurant site, so that the digital multimedia menu board indicates the menu items and prices, and advertisements for items which are presently being sold at the restaurant site. The appropriate digital multimedia presentation is played between an assigned start and end time and an assigned start and end date.

In particular, the presentations may abut each other in a serial fashion, with a succeeding presentation beginning at the end of a preceding presentation. In other instances, the valid periods for presentations may overlap in several ways. For example, a week-long special promotion presentation may supersede a quarterly seasonal presentation. For that week, the relative start dates are compared, with a preference for the presentation with the most recent start date.

Also, the start and end times which divide a day into periods may be related to a day profile which allows for several different ways of dividing days. For example, a weekend day may have a distinct set of periods from a weekday. More preferably, there is a hierarchy of preferred matching of day profiles which determines what set of time periods are in effect for a given day. These preferred matching profiles may be determined by the manner in which a date is specified. For example, a fully specified date such as 3/17/1997 may have priority over a partially specified date such as 12/25, which itself may have a preference over a day of the week such as Thursday, which itself may have preference over a weekday versus weekend specification.

Accordingly, as shown at Block 226, when the player computer is started, or if the current time is a boundary between sales periods, then at Block 232, a candidate digital multimedia presentation is selected for playback. Candidate digital multimedia presentations are identified as those presentations with an assigned start date greater than or equal to the current date and with an assigned start time which falls within the current sales period. If more than one candidate presentation is available, then the candidate with the most recent or greatest assigned start date is started at Block 234. If no candidate presentations are available from Block 232, then the default digital multimedia presentation is started at Block 228.

Having started an appropriate digital multimedia presentation, control returns to Block 226. Until the next sales period boundary or player computer start-up, the player computer storage is periodically checked for outdated digital multimedia presentations beginning at Block 244. If the assigned end date of any digital multimedia presentation is less than, i.e. before, the current date, then the expired presentation is moved to the "outdated" directory at Block 246. If there are no such presentations, then at Block 236 a check is made to determine whether the available storage capacity of the player computer has fallen below a configurable threshold. When the storage capacity falls below that threshold, then the contents of the "outdated" directory are purged to make room for new digital multimedia presentations.

It will be understood that control is periodically passed through Block 238, where a test is made to determine that there is an appropriate digital multimedia presentation displayed. If that test indicates any error in the presentation playback, then the default digital multimedia presentation is displayed at Block 228.

Central Control and Monitoring Station

A detailed operational explanation of control and monitoring station 108 (Figure 1) will now be described in connection with Figure 3. As shown in Figure 3, the control and monitoring station 108 includes control and monitoring software which may be accessed by a system operator to manage the client and site database 110, prepare digital multimedia presentation packages for distribution and track system status and history.

The presentation database 104 is maintained and populated by the content process described in connection with Figure 1. The control and monitoring station 108 accesses the presentation database 104 to identify the digital multimedia presentations which are available for distribution when an operator creates a distribution package.

The client and site database 110 contains information about various enterprises related to the store business, including but not limited to contact and site information and information about the on-site player configuration and installation.

Figure 4 illustrates an Entity-Relationship conceptual model of the client and site database 110. The modeling of databases using entity relationships was first described by Chen. An in-depth presentation of the Entity-Relationship approach may be found in an article by Teorey et al. entitled "*A Logical Design Methodology for Relational Databases Using the Extended Entity-Relationship Model*", published by ACM Computing Surveys, Vol. 18, No. 2, June 1986, the disclosure of which is hereby incorporated herein by reference.

As shown in Figure 4, the client and site database conceptual model represents entities and relationships, implemented in a relational database, which the control and monitoring station 108 manipulates. Enterprise entities can be an

advertising agency or its clients, vendors or partners. Alternatively, enterprise entities may be a restaurant chain or other business having multiple sites, such as an airline. As shown in Figure 4, an enterprise owns sites and employs contacts (people) who occupy one or more offices (or stations) provided by an enterprise site. Enterprises may also  
5 define regions which allow many sites to be represented by a convenient shorthand notation.

Continuing with the description of Figure 4, a player is a computer configured with a particular set of monitor controllers at a known site. It will be understood that enterprises, contacts, computers, monitors, computer configurations and  
10 display configurations can each exist in the database independent of other entities. Thus, they are independent entities. In contrast, regions, sites, offices and players only exist in relation to one or more independent entities. As such, they are shown as “dependent” entities.

Accordingly, in order to assemble a package of digital multimedia  
15 presentations for the plurality of stores, an operator at the control and monitoring station 108 selects one or more programs from the presentation database 104, specifies destination sites from the client and site database 110 and schedules the package start and expiration dates. The information that comprises the package is stored in the presentation tracking database 302. Packages are queued for distribution to on-site  
20 players using the CreativePartner agent 304. Other multimedia distribution packages may also be employed. The CreativePartner agent 304 copies the package files to on-site players 118 via the distribution server 106 which is connected a wide area network (WAN) 114, as will be described below.

Information such as on-site player operating status and the currently displayed multimedia presentation can also be provided from the on-site players 118 via the distribution server 106 and the CreativePartner agent 304, back to the control and monitoring station 108 to be incorporated into the presentation tracking database 302.

5 For example, a particular digital multimedia presentation may have several implementations. An on-site manager may have the option of selecting one of several implementations. The actual digital multimedia presentation which is selected at any given site can be monitored from the control and monitoring station 108 using the presentation tracking database 302. With appropriate interfaces to client point-of-sale  
10 data, this data can also be analyzed to monitor program effectiveness with respect to sales and to generate new digital multimedia presentations if a current presentation is not effective. Figure 5 describes an Entity-Relationship conceptual model of the presentation tracking database 302.

#### Local and Wide Area Networks

15 Figures 6A and GB illustrate two examples of wide area networks 114 of Figure 1. It will be understood that many other examples of wide area networks may be used. As shown in Figures 6A and 6B, the central location may include a distribution server 106 for the central local area network 602. An ISDN/FR/ATM router 604 may be used to route messages to one or more wide area networks 114. Client routers 606  
20 may be used to interface local area networks 608 for each site.

Figure 7 illustrates a local area network which may be used at a central location to develop, store and queue digital multimedia presentations. It will be understood that many other local area networks can be used. A plurality of content

development stations 702 are shown, as well as a database server 704 to serve the presentation database and the client and site database.

Figure 8 illustrates an example of an on-site local area network which may be used at each of the stores. As shown, a plurality of on-site players 118 and a store administration station 120 may be included. The functions of an on-site player and store administration server may be combined into a single unit 802. Other on-site devices 804 such as point-of-sale devices may be included in the local area network.

In Figure 8, two types of digital multimedia displays are shown. A kiosk 806 is shown including two separate displays therein. The displays may also be tiled to form a single virtual display; that is, simultaneously with each other, the kiosk displays may display different visual portions of a single multimedia presentation. A second on-site player 810 is shown with a five-display operational menu board.

#### On-Site Players

Referring now to Figure 9, operational details of on-site players 118 (Figure 1) will now be described. The on-site player includes a CreativePartner agent 902, monitor software 904, cron software 906, movie mover software 908 and master player software 912. Each of Blocks 902, 904, 906, 908 and 912 may represent a single software process executing on the player computer. Preferably, each player 118 includes a complete set of the player software to manage its operation.

The player software is responsible for receiving digital multimedia presentation packages, verifying package content, processing packages to schedule presentations and carry out utility maintenance, displaying scheduled presentations, and deleting expired presentations. Player software also monitors the state of the system, with regard to processes and programs that are currently running, reports status to the

central monitoring system 108, and may intervene automatically for certain simple error conditions. Initial implementation of the player software may be targeted for Macintosh OS, but the individual components can be portable to other operating systems.

The descriptions of the player software components below make reference to the player's directory structure:

HD:

Player:

Drop Box:	file packages arrive in the drop box
Schedule:	holds cron, monitor, log & schedule files
Movies:	subdirs hold cast/movie (CXT, DXR) files
Waiting:	movies not yet schedulable
Now Playing:	copy of the one movie now playing
Playable:	all currently valid movies and casts
Outdated:	expired movies/casts (deletable)
Default:	One movie suitable to play anytime

The CreativePartner Agent 902 is the gateway to the network for the player software. The monitor 904 registers with the CreativePartner Agent 902 to receive notification of package arrival. The monitor 904 also interfaces with the CreativePartner Agent 902 to upload system status reports to the central monitoring system 108.

When the monitor 904 is notified of a package arrival, the package is verified and processed, or an error report is generated if the package cannot be verified. A package includes a set of files which may include presentations, constituent media files, and utility programs with any associated data files. A package preferably includes a package description file, or PKG file, which details the file set and includes presentation scheduling information.

The PKG file format may be a simple, extensible, line-oriented text format. PKG files may be generated automatically by the central control software, but



may be hand-edited for testing or exceptional circumstances. Below is a sample PKG file:

```

: Just in case we hand-edit these, any lines containing
: colon characters that aren't recognized are ignored.
: Any line with no colons is assumed to be a content-file
: name (no leading/trailing whitespace in filenames).
run: util00 HD: Player: Movies: outdated
start date: 1/15/97 00:00:00
expire date: 2/15/97 00:00:00
dayparts:*
files:
    VALENTINE 97.DXR
    HEARTS 97.CXT
: This 'run' command happens after content files are
: processed, the other one runs before processing.
run: util00 - HD: Evince:Movies:Waiting
: A simple checksum for security/validation
checksum: 0xFF7C02A8

```

Packages are processed by monitor 904 as follows:

Package is validated, if files missing or checksum fails, generate error report.

If package is OK, then:

- Launch pre-run utilities
- Move content files to 'Waiting' area
- Modify crontab/schedule as needed
- Launch post-run utilities
- Delete PKG file (if no other PKG files, clean dir, too)
- Log entry: files listing, PKG file name

Cron 906 may utilize a proven, robust UNIX utility which has been ported to most common operating environments. Cron 906 is driven by a standard format text file, called the 'crontab'. It is especially suited for scheduling repetitive tasks at fixed times. The player software system also uses cron 906 to schedule program changes that occur due to start date and expiration date arrival. Below is a sample crontab file:

// The fields of a crontab entry are:

```
//      minute hour monthday month weekday user command...
45      3 * * * nobody reboot
00      4 * * * nobody timesync
15      4 * * * nobody disclean
```

```
0 0 15 1 * nobody moviemover "USPS VAL97.PKG"
0 0 15 2 * nobody moviemover "USPS VAL97.PKG"
```

When the monitor 904 processes a package containing start and expire data directives, it makes entries in the crontab that correspond to those dates, which cause cron 906 to invoke the movie mover 908. The movie mover 908 manages file moves from Waiting to Playable, Playable to Outdated, selects a movie for Now Playing, and removes entries from the crontab as they are completed. It is also invoked at system startup and by the monitor 904 whenever a package is processed. The movie mover 908 uses a movie schedule file to determine its actions. If a different program is selected for Now Playing, then the movie mover 908 signals the master player 912 to synchronize the program movie changeover. Below is a sample movie schedule file:

```
01/15/97      00:00:00      playable      * HEARTS 97.CXT
01/15/97      00:00:00      playable      * VALENTINE 97.DXR
01/15/97      00:00:00      cleantab      * USPS VAL97.PKG
02/15/97      00:00:00      outdated     * VALENTINE 97.DXR
02/15/97      00:00:00      outdated     * HEARTS 97.CXT
02/15/97      00:00:00      cleantab      * USPS VAL97.PKG
```

The master player 912 may be a custom Macromedia Director™ or other multimedia projector which implements the framework for program playback. The major components of that framework are a 'Send Pulse' routine, and routines which synchronize the changeover from one program to another. The 'Send Pulse' routine makes a timestamped entry in the monitor 904 status log, which the monitor can then use to verify that a valid program is running. If the monitor 904 fails to receive a pulse from the master player 912, it schedules the default presentation for immediate playback

and generates an error report. The master player 912 generally has one presentation 914 playing. The presentation 914 may be a Macromedia Director movie which is displayed in a subwindow of the master player process. In other words, the presentation 914 is preferably not itself a projector (self-running movie).

5 Together, the processes of the on-site player 118 ensure that there is always a valid promotional message displayed, manage presentation scheduling and expiration, report status information, and provide an extensible infrastructure for remotely managing the playback system without requiring intervention by on-site personnel.

10 Store Administration Servers (Central and On-Site)

Referring now to Figure 10, operational details for the central store administration server (112, Figure 1) and the on-site store administration server (120, Figure 1) will now be described. Although the present invention preferably allows many digital multimedia presentations to be executed without any action on the part of on-site personnel, there are some functions for which it may be useful to provide control and management tools to the store manager.

15 For example, some presentations may have more than one implementation, which allows the store manager to select which presentation to execute at a particular site. Presentations may also have optional controls, especially in the case of operational presentations such as a menu board, which provide for proper configuration at each site. A schedule of store opening, closing, and division of a day into differing periods may also be used in the automated presentation playback process. Since this schedule is likely to vary by location, the store manager can use the administration software to modify the schedule from the default for the client enterprise.

20

The administration software can also provide help, training and troubleshooting with respect to the on-site operation of the system, as well as a channel for feedback and non-urgent service requests.

The actions taken by a store manager using the control and monitoring station (on-site) 116 may result in communication with either a store administration server (Central) 112 or a store administration server (On-site) 120. The store administration server (Central) 112 communicates site administration input to the distribution server 106 where that input may affect presentation distribution or presentation configuration prior to distribution. When the administration input only affects post-distribution presentation configuration, it can be handled by the store administration server (On-site) 120 which can communicate directly with the On-site Players 118 to respond to the input.

The control and monitoring station 116 can be implemented by a workstation which supports a typical world-wide web browser application, and is preferably a computer which is already in place in the store environment for administration use. Hosting the administration software using standard Internet protocols and tools such as HTTP, FTP, and HTML allows flexibility not only in the selection of the control and monitoring station 116 but also in the location of the administration functions. The store manager need not be aware of whether a particular function is implemented by a store administration server (central) 112 or a store administration server (on-site) 120. The distribution network can be used to update the content of the store administration server (on-site) 120 similar to presentation updates.

Fast-Food Restaurant Environment

Referring now to Figure 11, the use of the present invention in a fast-food restaurant will now be described. As shown in Figure 11, a fast-food restaurant includes a conventional fast-food restaurant counter 1100 including point-of-sale terminals and food and beverage dispensers. Above the counter 1100 is a menu board 1110. According to the present invention, the menu board comprises a digital multimedia menu board including a plurality of digital multimedia displays 1110a-1110d which are arranged in an array to form a virtual display. The digital multimedia menu board 1110 may include digital multimedia presentations of menu items and prices and advertisements for items which are presently being sold at the restaurant site.

Figure 11 illustrates one arrangement of a digital multimedia menu board 1110. However, it will be understood by those having skill in the art that many other arrangements may be provided. As shown in Figure 11, display 1110a illustrates a multimedia advertisement for a particular promotional meal. Displays 1110b and 1110c illustrate value meal promotions. Display 1110d illustrates individual menu items and their associated prices.

By providing animated movement, a consumer may be induced to try a featured special. The menu board 1110 may change constantly. For example, the menu board may also include advertisements relating to participation of the restaurant in a local charity event for the next week.

Digital multimedia menu boards of the present invention may attract people to purchase selected items at a restaurant. Moreover, the concept-to-delivery cycle may be dramatically shortened. An idea may be created, a prototype generated, revisions made, approval obtained and the message delivered to the environment in a

short turnaround time and without costly and time-consuming printing and physical distribution of media. Moreover, the content can be changed constantly and the customer can see a different message with each visit. Messaging can be targeted and refreshed at will. Moreover, testing of new menu boards can be done quickly and results can be evaluated and changes made rapidly to develop highly effective messaging.

Well designed moving images can attract the consumer and deliver message effectively. The use of space can be optimized and multi-part messages can be shown over a short period of time on the same display. Environments can respond to market conditions quickly. A restaurant can rapidly react with its own competitive offerings. Moreover, if a promotion is not effective, the creative agency can rapidly refine the messaging to be more effective.

Messaging can be targeted by the time of day and promotional cycle. Customers can see only the breakfast menu in the morning and only the lunch menu at lunch time. Customer decision-making can therefore be faster and clutter may be reduced. Rush hour messaging can be quick and immediate, while off-peak messages can target a different customer.

Moreover, by delivering content digitally from a central location, with promotion parameters such as start and end dates automatically managed, execution can be nearly flawless and nearly effortless for the on-site staff. Resources can be managed more efficiently, because managers no longer need to depend on employees to install and maintain signage throughout the restaurant. Staff mistakes can be reduced or eliminated, and stores do not need to use spare storage space for bulky promotional display materials.

Figure 12 illustrates an interactive kiosk which may interface to the system of the present invention. The kiosk may be used to attract customers into the restaurant or to provide interactive game playing for a family as they enjoy a meal. Thus, the restaurant may become a center of family activities, rather than merely a location to eat.

Figures 13-16c depict a further embodiment of the invention in which multimedia presentations are modified at the sites to which they have been transmitted by automatic data acquisition of site-specific data from a database. Figure 13 is a schematic block diagram of a system according to this embodiment. In this embodiment, a transmitter or distribution server 1301 at a central location transmits packages, including one or more template multimedia presentations, to a backbone web server 1303, which may be at a location, and under the control of an entity, different from the central location and the entity assembling the multimedia presentations. The backbone web server 1303 transmits the multimedia presentation packages to a plurality of sites over a network 1305, which may be a WAN or the internet. One such site is shown at 1307.

The player, as programmed by player software, is shown at 1309. The player 1309 receives, and stores on appropriate storage media, such as one or more hard disks, a template multimedia presentation. Conceptually this exists as one or more files 1311. A gateway portion 1312 of the player 1309 links to a database 1313 which may be owned by an enterprise which controls the site 1307. The enterprise-controlled systems, software and databases are behind a security boundary 1315. The database 1313 may in turn derive its content from one or more proprietary databases 1317, 1319 and 1321 which may supply different sorts of data to database 1313. In the specific

example of an airline terminal display, database 1313 may contain, for each of a plurality of airport gate or other airport sites, site-specific data on flight schedules, equipment, flight destinations, scheduled and actual arrivals, scheduled and actual departures, destination temperatures, present aircraft locations, available and occupied seating, and other items of data relating to the details of an aircraft flight or of the site for which the data are intended. Different ones of these data can be contributed to the system-accessible database 1313 by different ones of the databases 1317-1321. For example, database 1317 may contain data on flight status. Database 1319 may contain information on the presently available and already reserved seating on an aircraft. Database 1321 may contain data on the weather presently being experienced at the flight's destination.

In the illustrated embodiment, the enterprise database 1313 stores data for many sites, flights, destinations, etc. instead of one such site, flight or destination. To identify data which should be retrieved from any one particular flight or site, each datum bears a metatag. The metatag can indicate a single, particular flight or site, or can indicate a group of flights or sites for which retrieval should be made. The gateway 1312, and particularly its data parser 1323, retrieves only that data bearing metatags identifying the site, flight or destination. The flight is in turn related to the identity of the site, which may be a gate at an airport terminal.

File transfer between the database 1313 and the data parser 1323 may be made by FTP protocol, and the file type can be HTML. The data parser 1323, in addition to retrieving that data whose metatags indicate that it should be retrieved to the site 1307, converts the file type to a tab-delimited format which is useful to populate fields in a template multimedia presentation.



Optionally, a console 1325, which preferably is at the site 1307 but may be at another remote location, may be used to modify the template multimedia presentation with manually-entered data, such as seating assignments. This information would also be transmitted back to the database 1313.

5 In addition to the gateway or media engine 1312, the player 1309 includes a distribution agent component 1327. The distribution agent manages incoming files from the backbone server 1303, and assures that they are placed into appropriate holding folders (not shown). The distribution agent 1327 further performs system maintenance and maintains two way communication with the host distribution engine  
10 1303. Finally, the distribution agent 1327 decrypts incoming files and interprets file maintenance commands.

The media engine 1312 has a data-synch extension and preferably is pointed, via an IP address, and communicates over a TCP/IP link, to the preferably secure enterprise database 1313. The media engine 1312 reads and interprets the  
15 received .TXT/INI files and may display the data on-screen (?), using appropriate graphics or multimedia elements. In case there is a network failure which effects link 1327, non-standard operating conditions, or the need to manually update content, the console 1325 is configured to override, as needed, the automated data acquisition programming contained within the media engine 1312.

20 Figure 14 shows one physical embodiment of the invention in which automated data acquisition may be used. The console 1325 is installed at an airline attendant's position at a gate and is connected to the player 1309. The player 1309, in turn, is connected via an RS 232 communications line 1401 in serial fashion to each of two displays 1403 and 1405, which preferably form a single, virtual display in their

operation; that is, different visual components of a single multimedia presentation are displayed on the displays 1403 and 1405. Alternatively, displays 1403 and 1405 may display copies of the multimedia presentation. The displays 1403 and 1405 are additionally connected to the player 1309 through video lines 1407 and 1409, respectively. Player 1309 is connected to a site network through an ISDN network connection 1411 or the like.

Figure 15 is a block diagram of a process of the automatic data acquisition embodiment of the invention. Reading Figure 15 in conjunction with Figure 13, at step 1501 one or more template presentations are transmitted from backbone web server 1303, or alternatively, directly from a central location distribution server 1301, to the player 1309 over the internet 1305. The template presentation(s) are then stored in an appropriate storage medium at step 1503.

Database 1313 is assembled from various enterprise or client sources at step 1505. That data which is intended for site 1307, or for a group of sites including site 1307, are periodically retrieved over link 1327, which may be a wide area network or the internet, by the data parser 1323, all at step 1507. The parser 1323 parses the retrieved data into tab-delineated fields at step 1509, and writes these converted data into corresponding fields in the template presentation at step 1511. These modifications result in a customized presentation at step 1513, which is then displayed on the site display(s) at step 1515. Changes to the site-specific multimedia presentation may occur as that presentation is being played.

Figures 16a-16c illustrate different multimedia virtual displays which are mapped onto physical displays 1403-1405 in the illustrated embodiment. Figure 16a illustrates a display which conveys only basic flight information to customers. Certain

elements of the illustrated display 1601 are derived from the template multimedia presentation sent over the internet 1305 (Figure 13). These include the upper and lower horizontal banners 1603 and 1605, the field identifiers (e.g., "local time") 1607 and, for example, other artwork 1609. The titles of certain variable fields which are intended to be displayed are also a portion of the template presentation, such as "overview for", "forecast", "high temp.", "low temp.", "flight details", "mileage plus miles", "aircraft type", and "on-board service(s)". In the embodiment shown in Figure 16a, the following elements are added from the database 1313: values for each of the "forecast", "high temp.", "low temp.", "flight details", "mileage plus miles", "aircraft type", and "on-board service(s)"; values for the flight number and the destination (the destination is also used to fill the "overview for" field); and a representative photograph or image of the destination city at 1610. The data parser 1323 also obtains the departure time 1611 and the flight time 1613.

Figure 16b shows a more advanced multimedia presentation that includes further data that are automatically acquired by the data parser 1323. In addition to the information shown in display 1601, display 1621 has a seating chart 1623 that gives a plan of the seating area of the aircraft. Different colors may be used, for example, to denote available seating, such as at 1625, and closed or already reserved seating, as at 1627. As the flight fills up or cancellations, upgrades or seat reassignments are made, these data will change from time to time.

The display shown in Figure 16c shows another kind of advanced multimedia presentation which can be made. In this instance, the basic information of display 1601 is repeated in a display 1631. However, the city picture 1610 is replaced with a diagram 1633 that shows, for example, the place of departure for the aircraft in

question and its present location on route to its destination. This information would be particularly useful for persons waiting for an aircraft to arrive.

The above airline-terminal embodiment is only one possible application of this combined multimedia presentation distribution and automated data acquisition  
5 embodiment. This embodiment may be used in any location in which data are changing in real time, are available most readily or conveniently from the enterprise itself, and in which such data would be of interest to viewers at that location. Other applications could be one for financial institutions, in which current or near-current stock prices and interest rates are displayed to bank customers, or sites in which the status or progress of  
10 a job or order would be of interest to consumers.

Accordingly, the present invention provides systems, methods and computer program products which distribute and manage digital multimedia presentations which typically function in an environment as promotional, operational or edutainment applications. The invention allows presentations to be delivered to all sites  
15 or to particular sites selected by region or specific address. Presentations are executed on-site using computer systems capable of driving multiple digital displays to create a single virtual display of various sizes. These computer systems are referred to as "players". Since presentations are stored on the player, the site may be disconnected from the network without impacting operations other than presentation distribution. A  
20 particular presentation may be static, or may be modified by integration of site-specific data. Data integration may occur dynamically or one time only, and may be performed by an in-store computer system or by a central computer system. Presentations may be interactive, as in a touchscreen order-entry, wayfinding, or game program, or passive, as in a simple promotional display which the end-user just reads. Presentations typically

run without requiring any in-store personnel action, but may include selection, scheduling, or configuration options which allow on-site personnel to customize the presentations. Template presentations may be modified on-site by automated data acquisition to create site-specific multimedia presentations.

5                   In the drawings and specification, there have been disclosed typical preferred embodiments of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being set forth in the following claims.

## WE CLAIM:

36

1           1.       A method for creating and displaying digital multimedia presentations at  
2 a plurality of remote locations, comprising the steps of:

3                   assembling, at a central location, at least one digital multimedia  
4 presentation;

5                   transmitting the digital multimedia presentation to a plurality of remote  
6 locations;

7                   receiving the digital multimedia presentation at the remote locations;  
8                   storing the received digital multimedia presentation at each remote  
9 location;

10                  at at least one remote location, automatically modifying the content of  
11 the stored multimedia presentation to create a modified multimedia presentation; and

12                  playing the modified multimedia presentation on a display at the remote  
13 location.

1           2.       The method of Claim 1, and further comprising the steps of:

2                   from the remote location, linking to a database having content tagged  
3 for the remote location;

4                   copying the content tagged for the remote location to a memory at the  
5 remote location; and

6                   using the copied, tagged content to modify the multimedia presentation.

1           3.     The method of Claim 2, and further comprising the steps of:  
2                     after said step of linking, retrieving all content from the database which  
3     has been tagged as relating to the remote location, the database having other content not  
4     tagged as relating to the remote location.

1           4.     The method of Claim 3, and further comprising the steps of:  
2                     retrieving tagged content from the database in a first format; and  
3                     converting the retrieved tagged content into a second, tab-delimited  
4     format.

1           5.     A method of creating and distributing multimedia presentations to  
2     multiple sites of an enterprise, comprising the steps of:  
3                     creating, at a first central location, a template multimedia presentation for  
4     a plurality of the sites;  
5                     transmitting the template multimedia presentation to media players at  
6     respective ones of the plurality of sites, each media player at a site storing an indicium  
7     of the identity of the site;  
8                     at each of the sites, storing the template multimedia presentation;  
9                     maintaining, an enterprise central location, an enterprise database  
10    including items useful for updating or completing a multimedia presentation, at least  
11    certain data in the database being specific for a site or group of sites;  
12                     from each site, linking to the enterprise database;  
13                     from the site, retrieving the site-specific data;

14 using the retrieved site-specific data to populate fields in the template  
15 multimedia presentation to create a site-specific multimedia presentation; and  
16 playing the site-specific multimedia presentation.

1 6. The method of Claim 5, and further comprising the steps of :  
2 changing data in the enterprise database from time to time;  
3 from the site, periodically retrieving the site-specific data from the  
4 database; and  
5 using the periodically retrieved site-specific data to update the site-  
6 specific multimedia presentation.

1 7. The method of Claim 5, and further comprising the steps of:  
2 assembling the enterprise database such that a plurality of metatags are  
3 used to identify different items of data, each metatag corresponding to a different site or  
4 group of sites; and  
5 for each site, linking to the client database to retrieve only data bearing a  
6 metatag which indicates that such data should be sent to the site.

1 8. The method of Claim 5, and further comprising the steps of:  
2 retrieving the data from the enterprise database to the site in a first  
3 format; and  
4 at the site, converting the retrieved data into a form useful for populating  
5 respective fields in the stored template multimedia presentation.



1           9.     A system for creating and displaying digital multimedia presentations at a  
2 plurality of sites, comprising the steps of:

3                 assembly means for assembling, at a central location, at least one digital  
4 multimedia presentation;

5                 a transmitter coupled to the assembly means for transmitting the digital  
6 multimedia presentations to a plurality of sites;

7                 at each site, multimedia apparatus including:

8                     a player adaptable to receive a digital multimedia presentation from the  
9 transmitter;

10                 a site storage device coupled to the player for storing a received digital  
11 multimedia presentation;

12                 the player further coupled to a second database storage device for  
13 automatically retrieving data for display at the site, the player automatically modifying  
14 the stored received digital multimedia presentation with the retrieved data to create a  
15 site-specific digital multimedia presentation; and

16                 a multimedia display coupled to the player for displaying the site-specific  
17 digital multimedia presentation.

1           10.    The system of Claim 9, wherein the transmitter comprises:

2                 a first transmitter disposed at the central location and coupled to the  
3 assembly means; and

4                 a second transmitter disposed at a third location and coupled to the first  
5 transmitter, the first transmitter transmitting template multimedia presentations to the

6 second transmitter, the second transmitter transmitting the template multimedia  
7 presentations to the plurality of sites.

1 11. The system of Claim 9, wherein the transmitter transmits the digital  
2 multimedia presentation to the remote locations by a selected one of the internet, a  
3 wireless network, and a wide-area network.

1 12. The system of Claim 9, wherein the multimedia display comprises a  
2 virtual display having a plurality of physical display devices, each of the physical  
3 display devices displaying a different visual portion of the site-specific multimedia  
4 presentation.

1 13. The system of Claim 9, wherein the second database storage device is  
2 disposed at a third location remote from the site and the central location, a  
3 communications link coupling the second database storage device to the player at the  
4 site.

1 14. The system of Claim 9, wherein a plurality of tags are attached to items  
2 of data in the second database, the tags identifying data which should be displayed at a  
3 particular site or group of sites, the player at a particular site retrieving only those data  
4 which are tagged with a tag indicating that the data should be retrieved to that site.

1           15.    The system of Claim 9, and further comprising a data parser adaptable to  
2           be coupled to the second database storage device, the data parser retrieving data from  
3           the second database in a first format and converting the retrieved tagged data into a  
4           second format suitable for modifying the stored received multimedia presentation.

1           16.    A system for creating and distributing multimedia presentations to  
2           multiple sites of an enterprise, comprising:

3                   assembly means disposed at a central location for assembling a template  
4           multimedia presentation for a plurality of the sites;

5                   a transmitter coupled to the assembly means for transmitting the template  
6           multimedia presentation;

7                   at each of the sites, multimedia presentation modification and playing  
8           apparatus comprising:

9                   a player for receiving the template multimedia presentation from the  
10          transmitter;

11                  a storage device for storing the template multimedia presentation;

12                  the player automatically linking to an enterprise database storage device,  
13          certain data in the database being specific to a site or group or sites, and automatically  
14          retrieving said data, the player automatically populating fields in the template  
15          multimedia presentation with said data to create a site-specific multimedia presentation;

16          and

17                  a display coupled to the player for displaying the site-specific multimedia  
18          presentation.

1           17.     The system of Claim 16, wherein the enterprise database has data which  
2           changes over time, the player periodically retrieving from the database those data which  
3           are used to create the site-specific multimedia presentation, the player using the  
4           periodically retrieved data to update the site-specific multimedia presentation.

1           18.     The system of Claim 16, wherein the enterprise database includes a  
2           plurality of metatags attached to items of data, each metatag identifying a different kinds  
3           of data to be used in creating site-specific multimedia presentations, the player at a site  
4           retrieving only data bearing a metatag which shows that the data should be retrieved to  
5           that site.

1           19.     The system of Claim 16, wherein the player includes a convertor which  
2           retrieves the data from the enterprise database to the site in a first format and converts  
3           the retrieved data into a form useful for populating respective fields in the stored  
4           template multimedia presentation.

1           20.     A computer program product for creating and displaying digital  
2           multimedia presentations at a plurality of sites, the computer program product including  
3           at least one storage medium having computer-readable program code embedded in the  
4           medium, the computer-readable program code comprising:

5                     first computer-readable program code for programming central  
6           processing means for assembling, at a central location, at least one digital multimedia

7 presentation and for transmitting the digital multimedia presentation to a plurality of  
8 remote locations; and

9 second computer-readable program code for programming remote  
10 processing means for receiving the digital multimedia presentation at the remote  
11 locations, storing the received digital multimedia presentation at each remote location,  
12 automatically modifying the content of the stored multimedia presentation to create a  
13 modified multimedia presentation, and playing the modified multimedia presentation on  
14 a display at the remote location.

1 21. The computer program product of Claim 20, wherein the second  
2 computer-readable program code programs the remote processing means to  
3 automatically link to a database having content tagged showing that the content should  
4 be retrieved to the remote location, copy the tagged content to a memory at the remote  
5 location, and use the copied, tagged content to modify the multimedia presentation.

1 22. The computer program product of Claim 21, wherein the second  
2 computer-readable program code programs the remote processing means to retrieve all  
3 content from the database which has been tagged as relating to the remote location, the  
4 database having other content not tagged as relating to the remote location.

1 23. The computer program product of Claim 21, wherein the second  
2 computer-readable program code programs the remote processing means to retrieve  
3 tagged content from the database in a first format, and convert the retrieved tagged  
4 content into a second, tab-delimited format.

1           24.     A computer program product for creating and distributing multimedia  
2 presentations to multiple sites of an enterprise, the computer program product including  
3 at least one storage medium having computer-readable program code embedded therein,  
4 the computer-readable program code comprising:

5                     first computer-readable program code for programming central  
6 processing means for creating, at a first central location, a template multimedia  
7 presentation for a plurality of the sites, and transmitting the template multimedia  
8 presentation to media players at respective ones of the plurality of sites; and

9                     second computer-readable program code for programming remote  
10 processing means at a site for storing an indicium of the identity of the site, storing the  
11 template multimedia presentation, linking to an enterprise database including data used  
12 for creating a multimedia presentation specific to the site, retrieving the said data, using  
13 the retrieved data to populate fields in the template multimedia presentation to create a  
14 site-specific multimedia presentation, and displaying the site-specific multimedia  
15 presentation.

1           25.     The computer program product of Claim 24, wherein the second  
2 computer-readable program code programs the remote processing means to periodically  
3 retrieve the data from the database, said data in the database changing over time, and  
4 using said periodically retrieved data to update the site-specific multimedia presentation.

1           26.    The computer program product of Claim 24, wherein the second  
2   computer-readable program code programs the remote processing means to retrieve  
3   data from the database bearing a metatag indicating that the data should be retrieved to  
4   that site.

1           27.    The computer program product of Claim 24, wherein the second  
2   computer-readable program code programs the remote processing means to retrieve the  
3   data from the enterprise database to the site in a first format, and converts the retrieved  
4   data into a form useful for populating respective fields in the stored template multimedia  
5   presentation.  
6

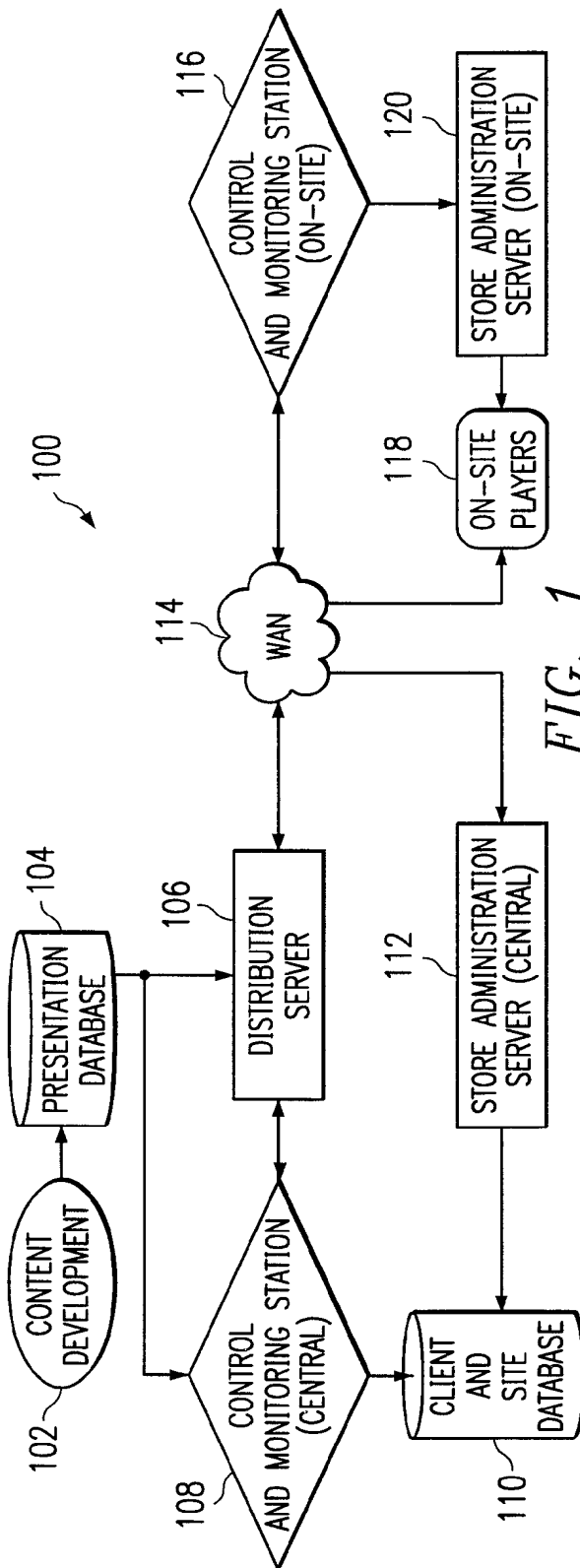


FIG. 1

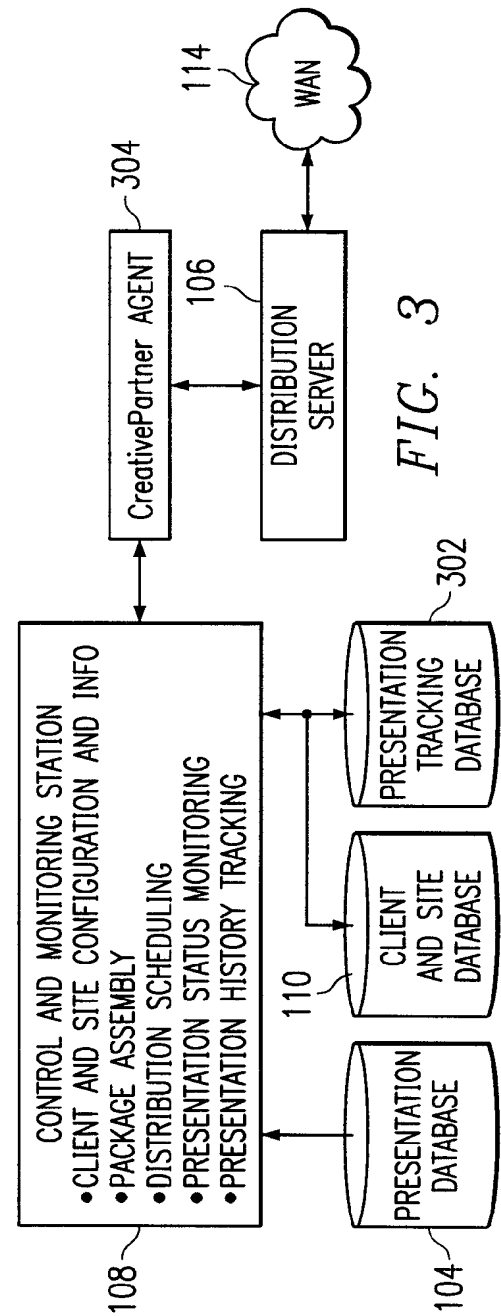
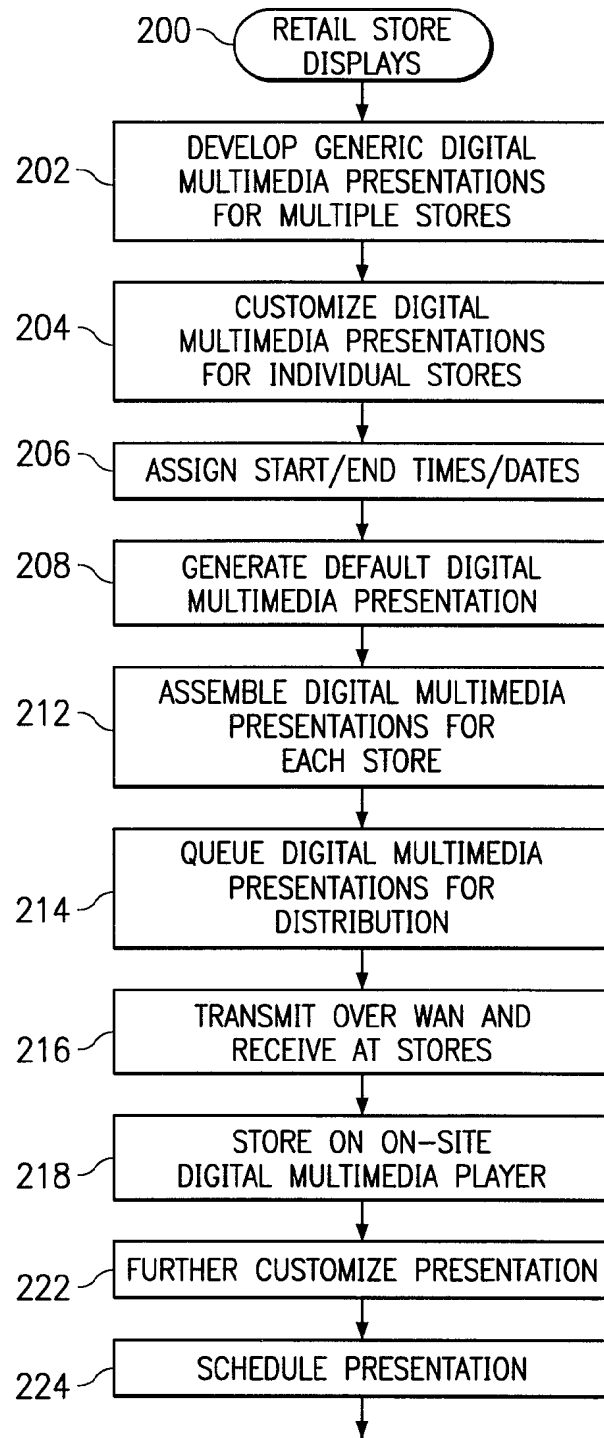


FIG. 3



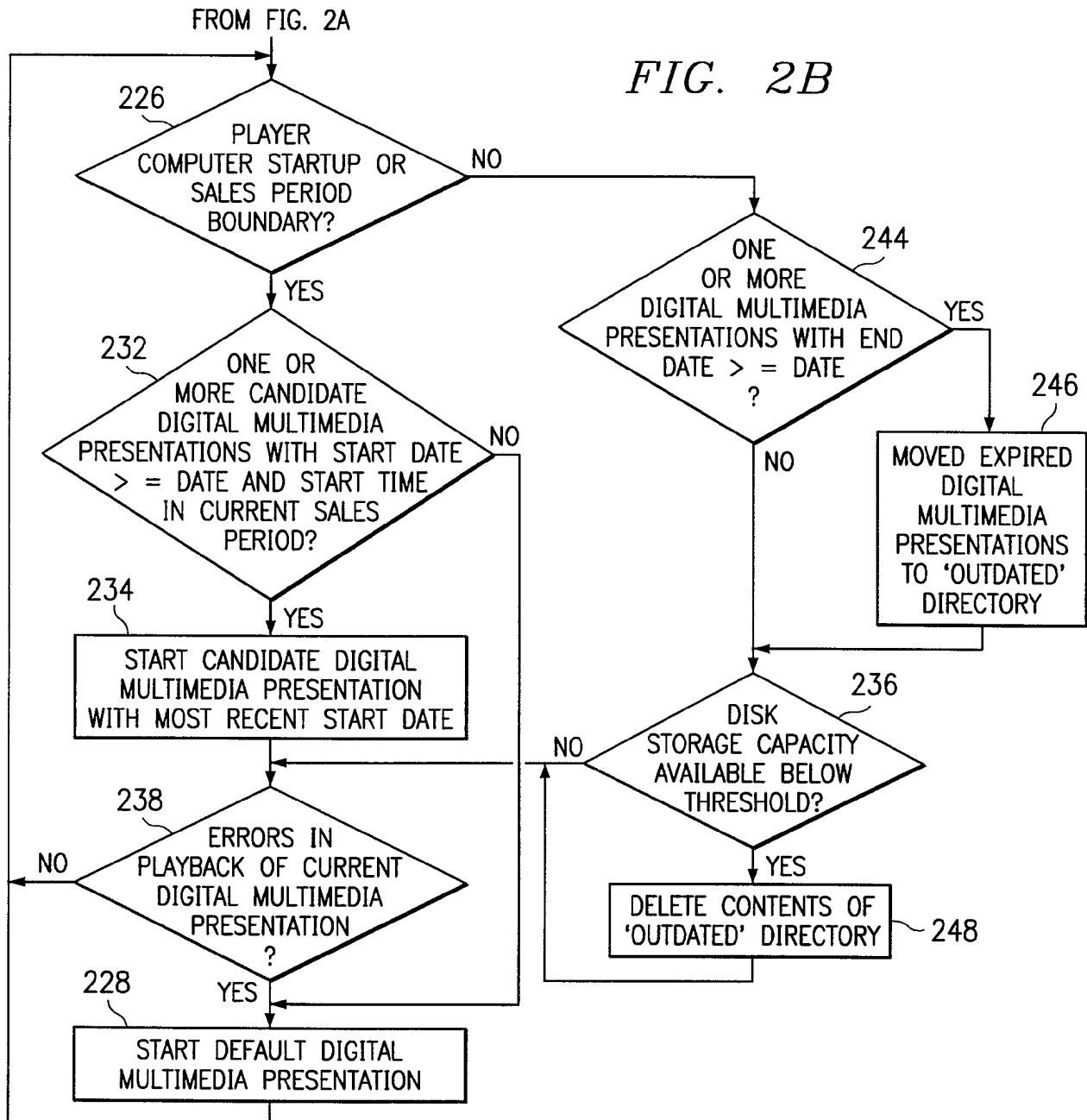
2/14



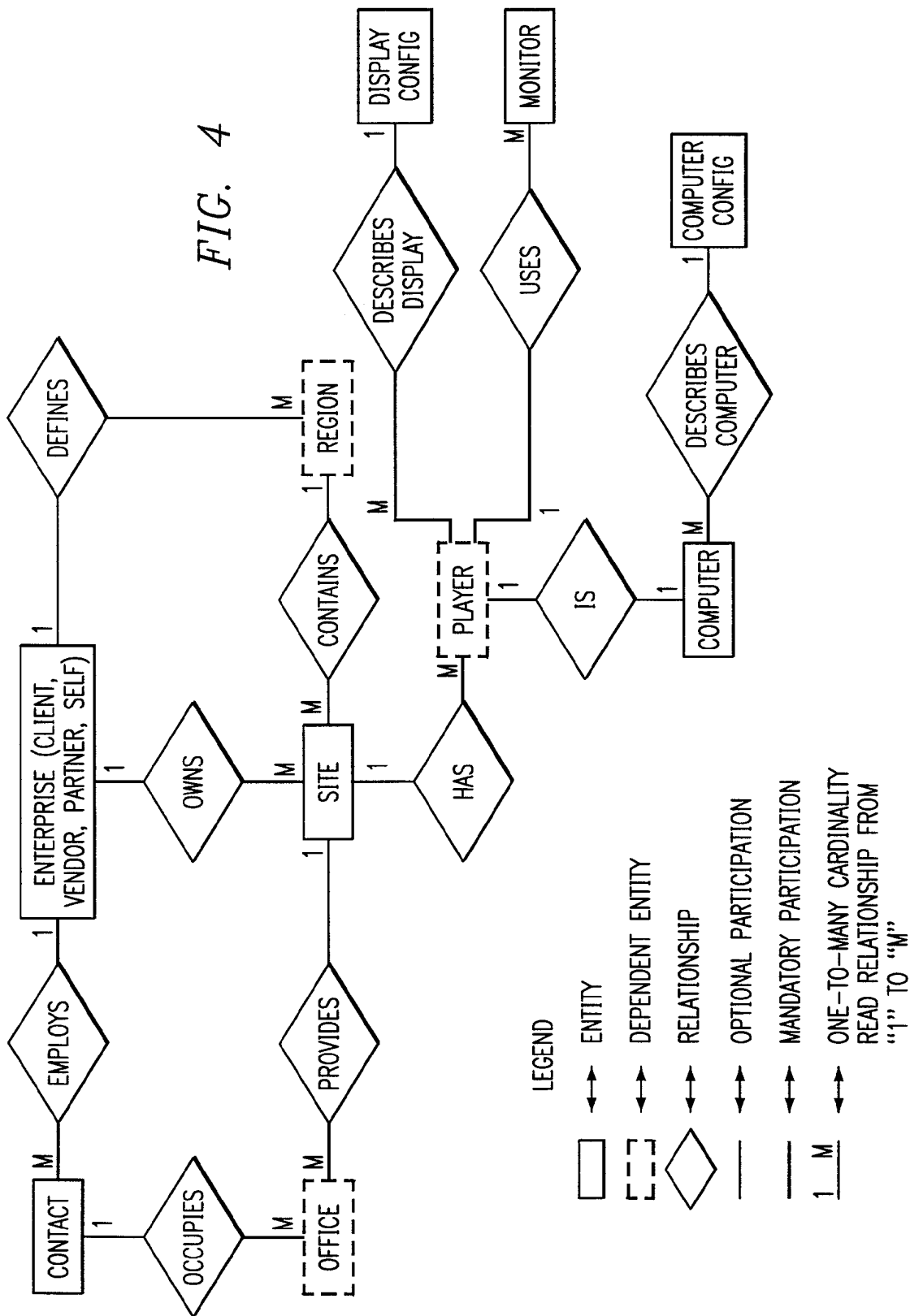
TO FIG. 2B

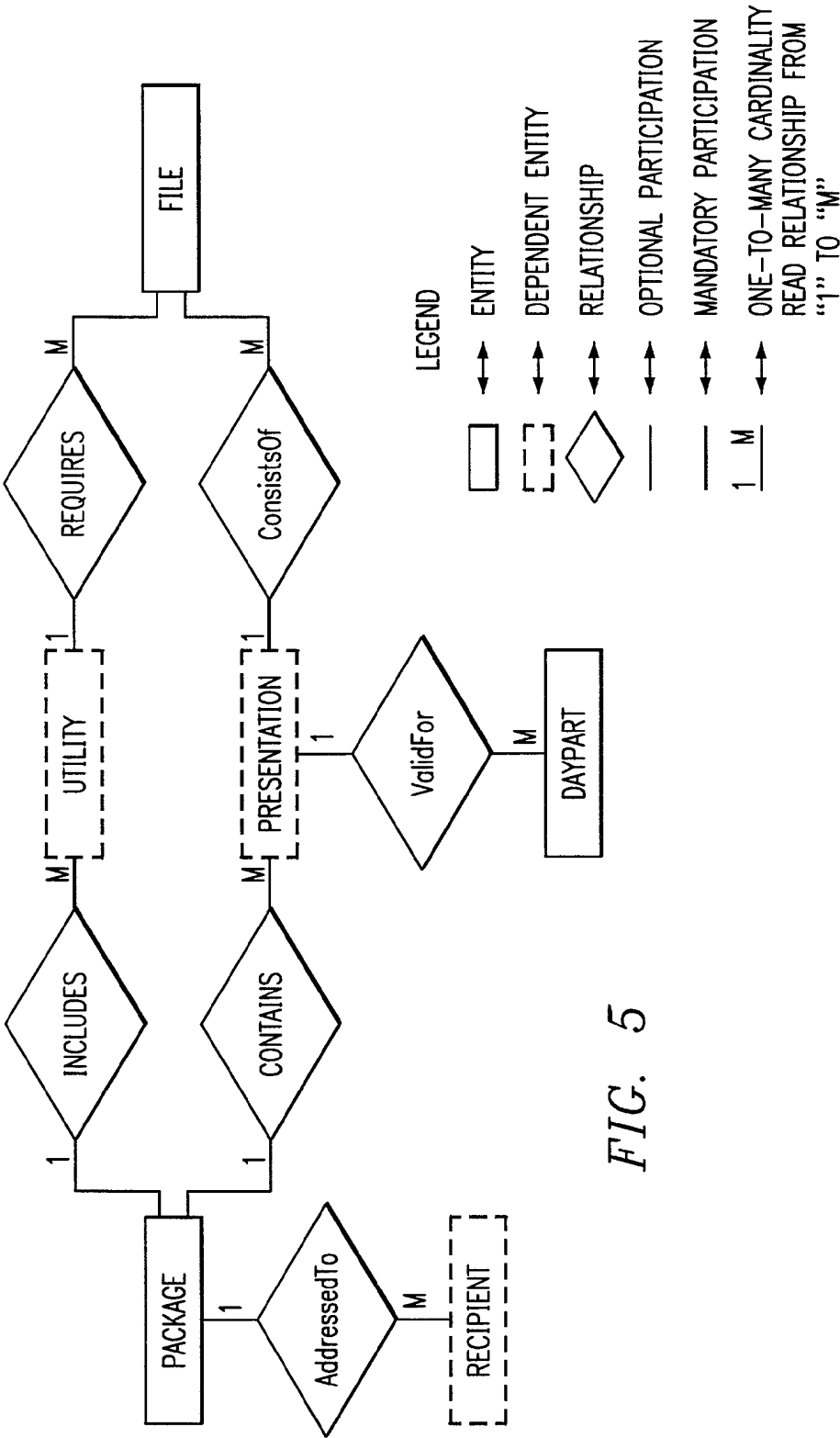
*FIG. 2A*

FIG. 2B



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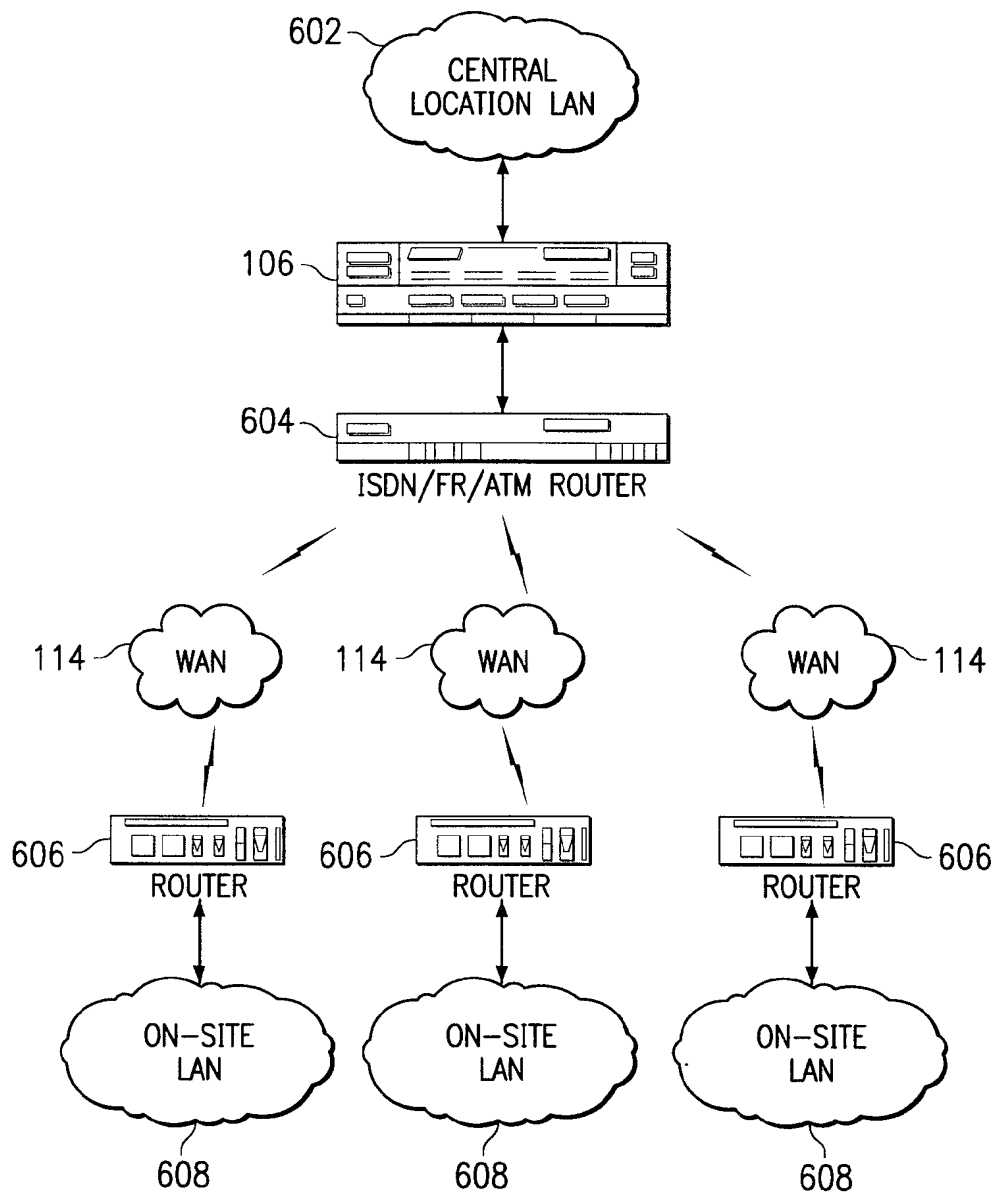


FIG. 6A

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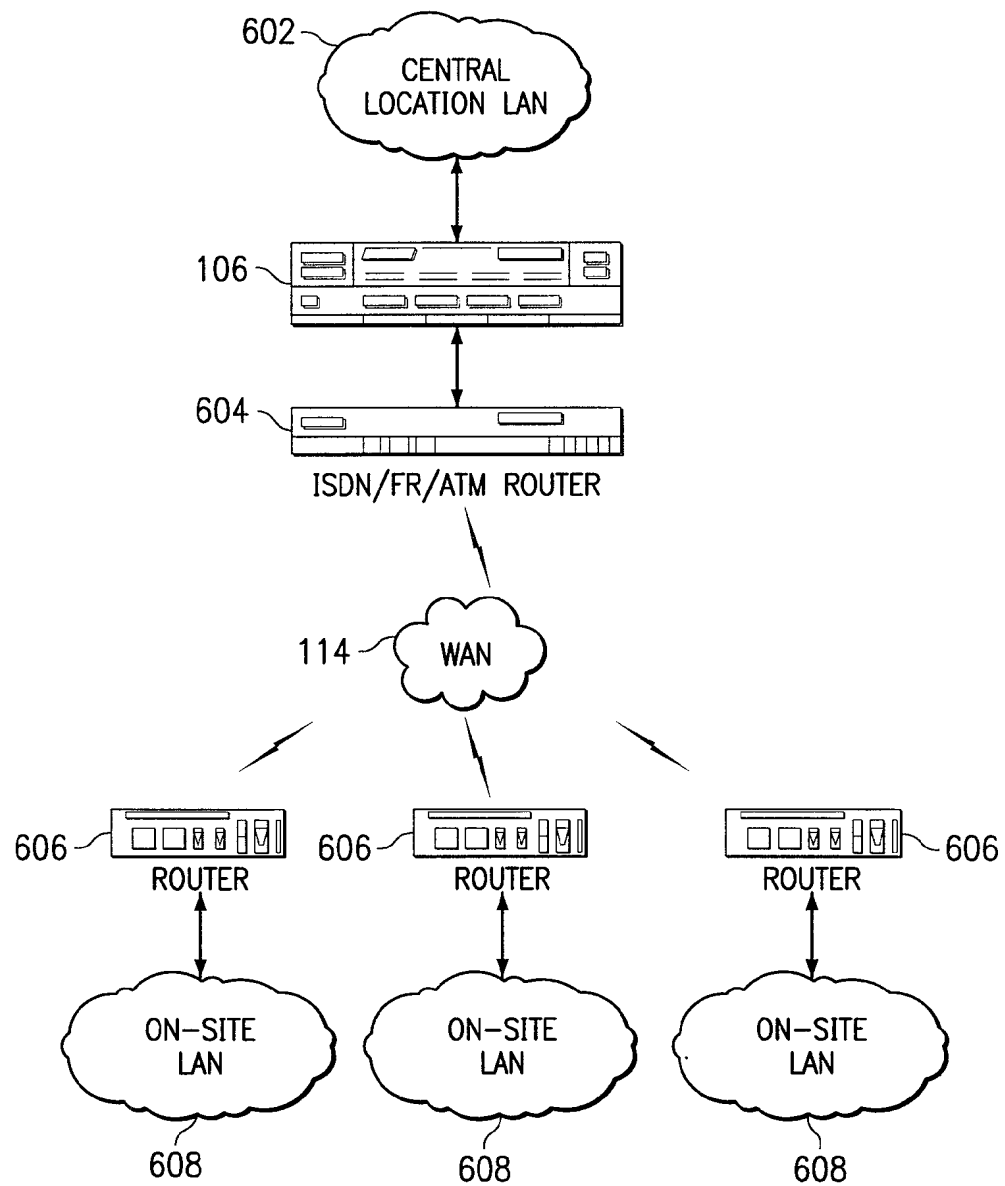
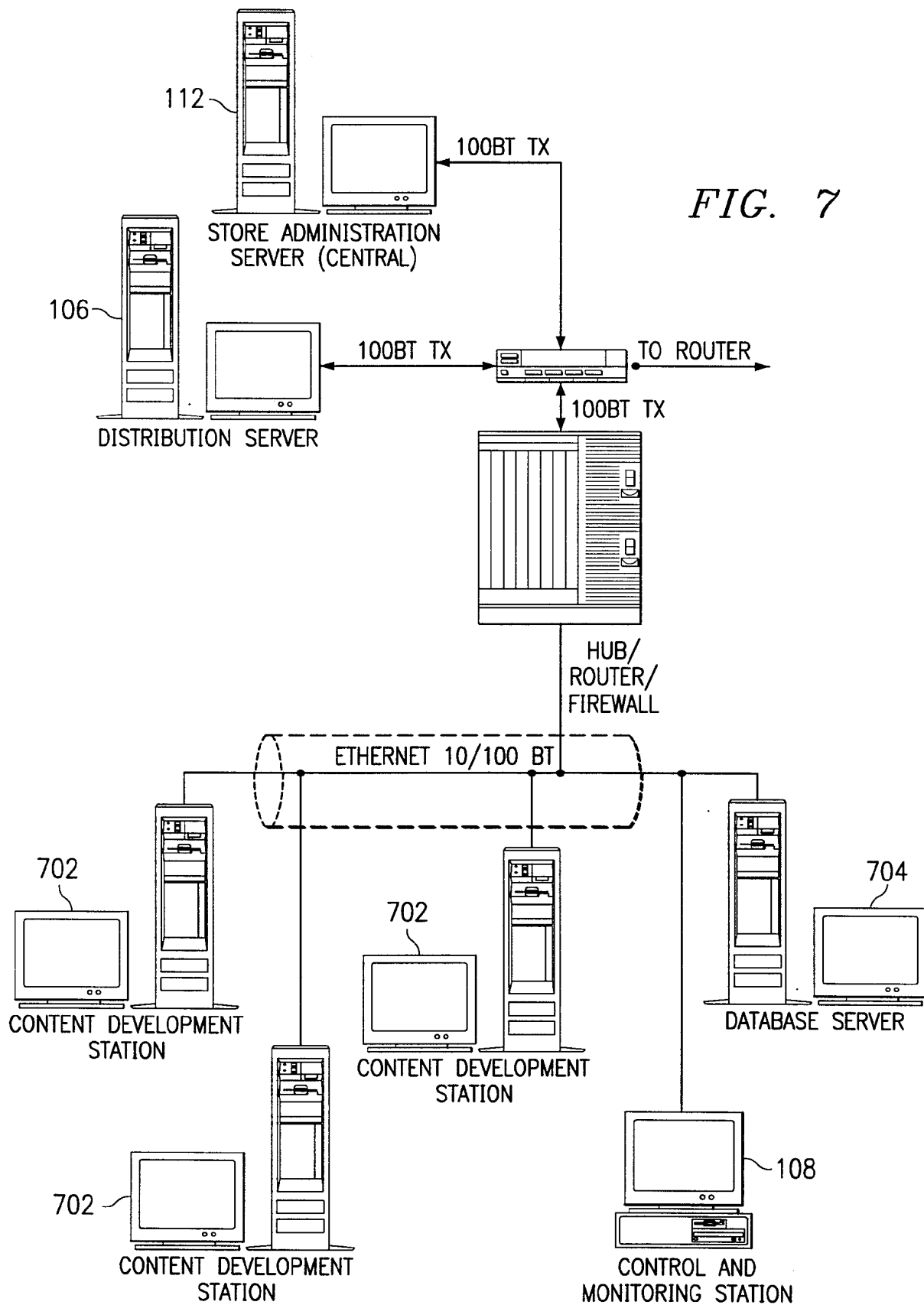


FIG. 6B

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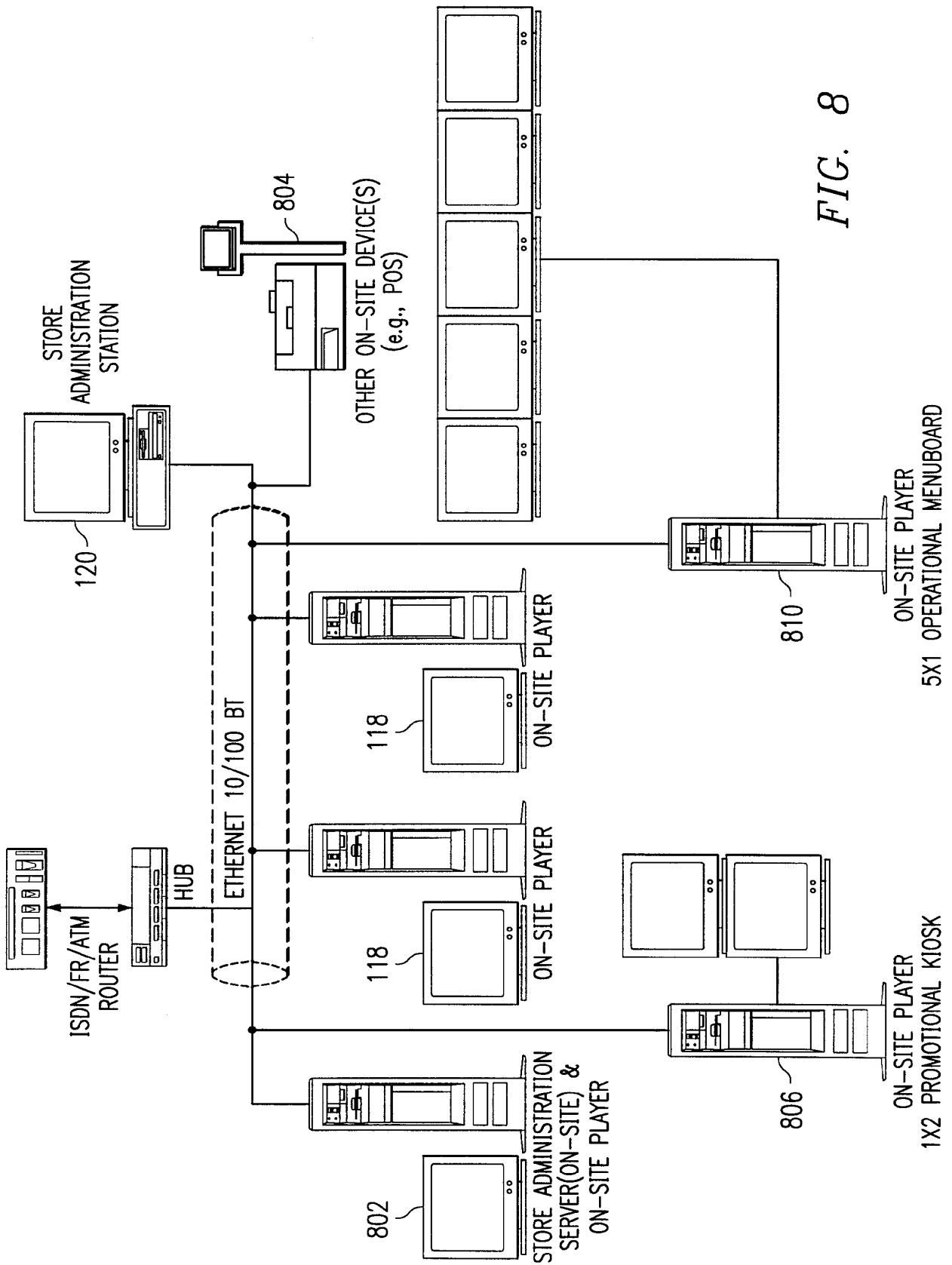


FIG. 8



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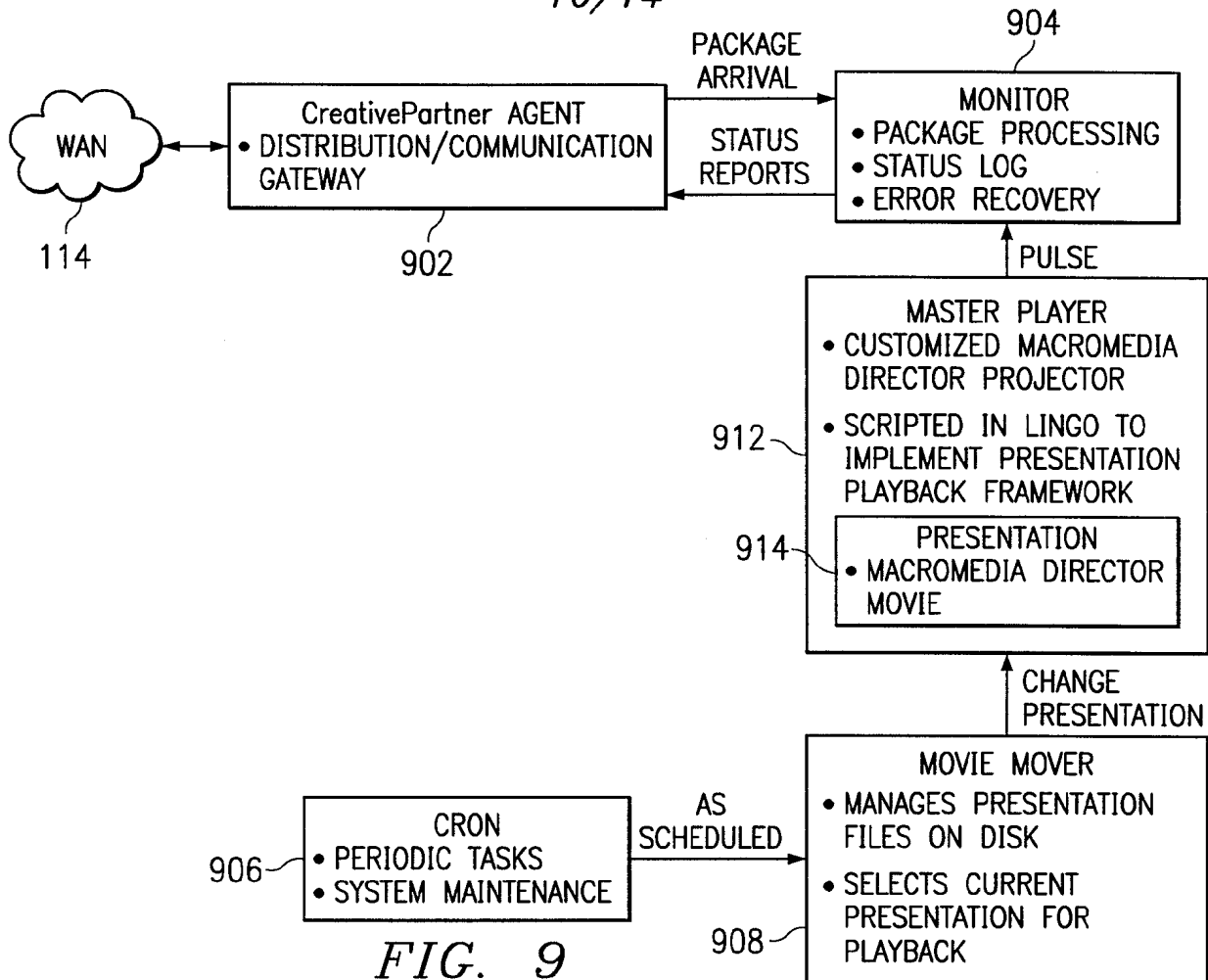


FIG. 9

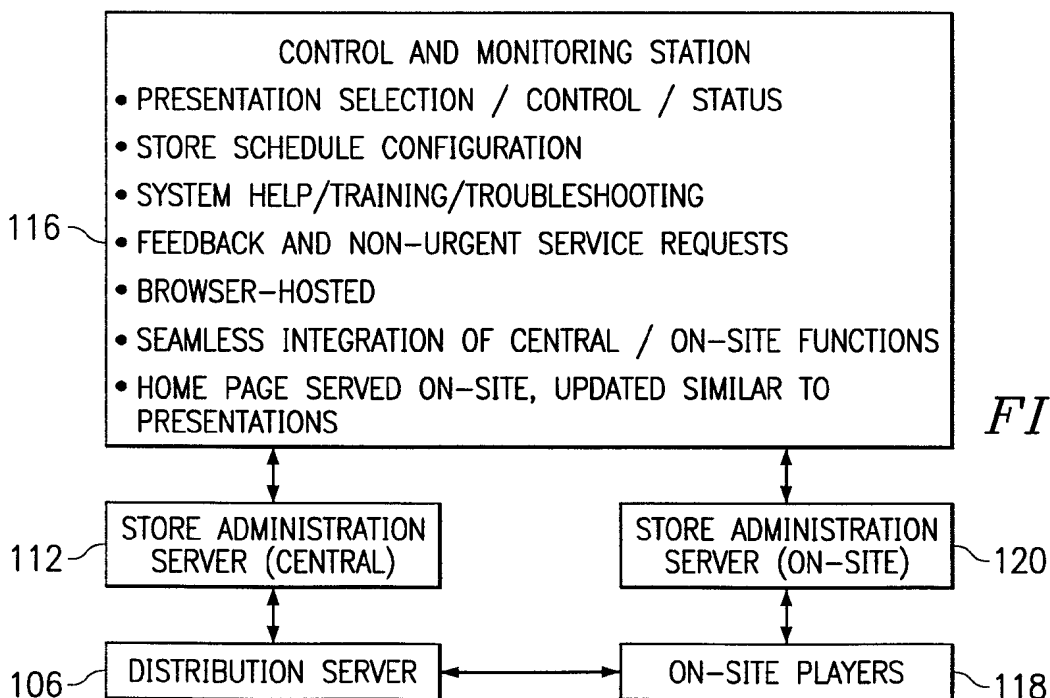


FIG. 10

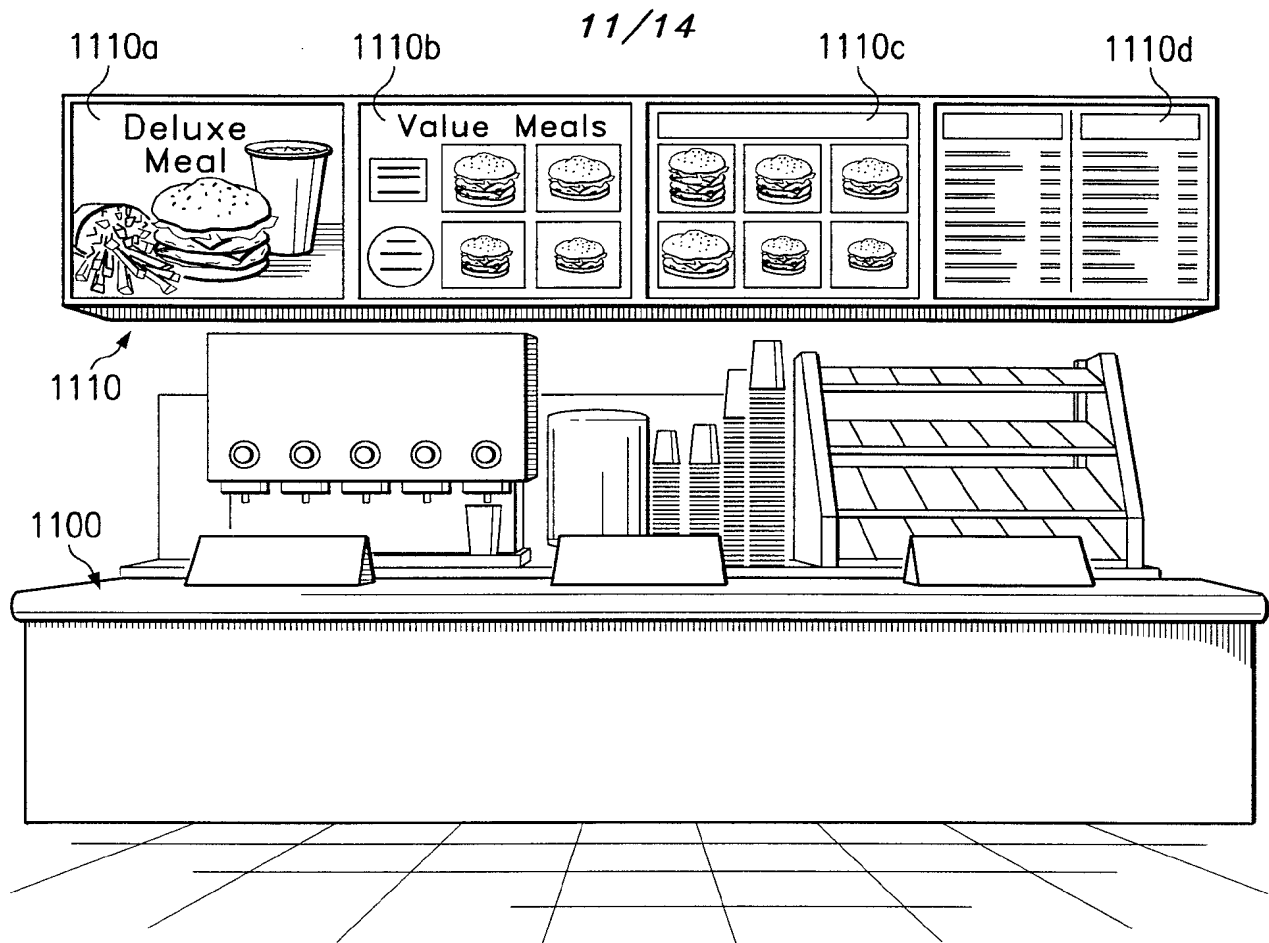


FIG. 11

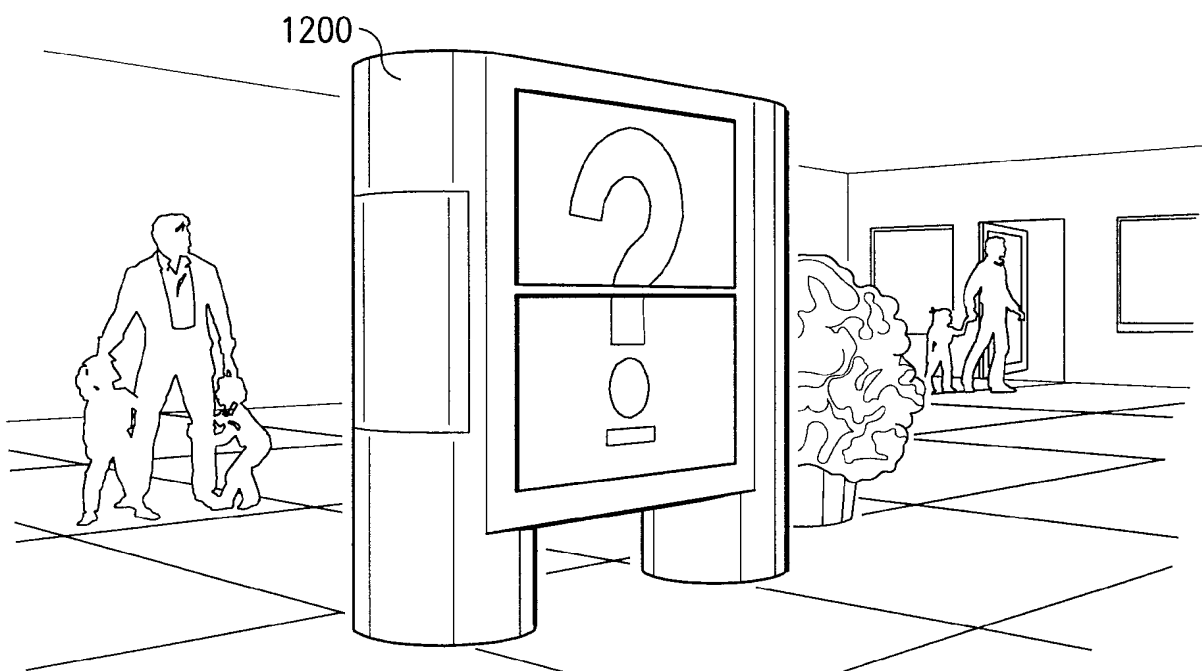
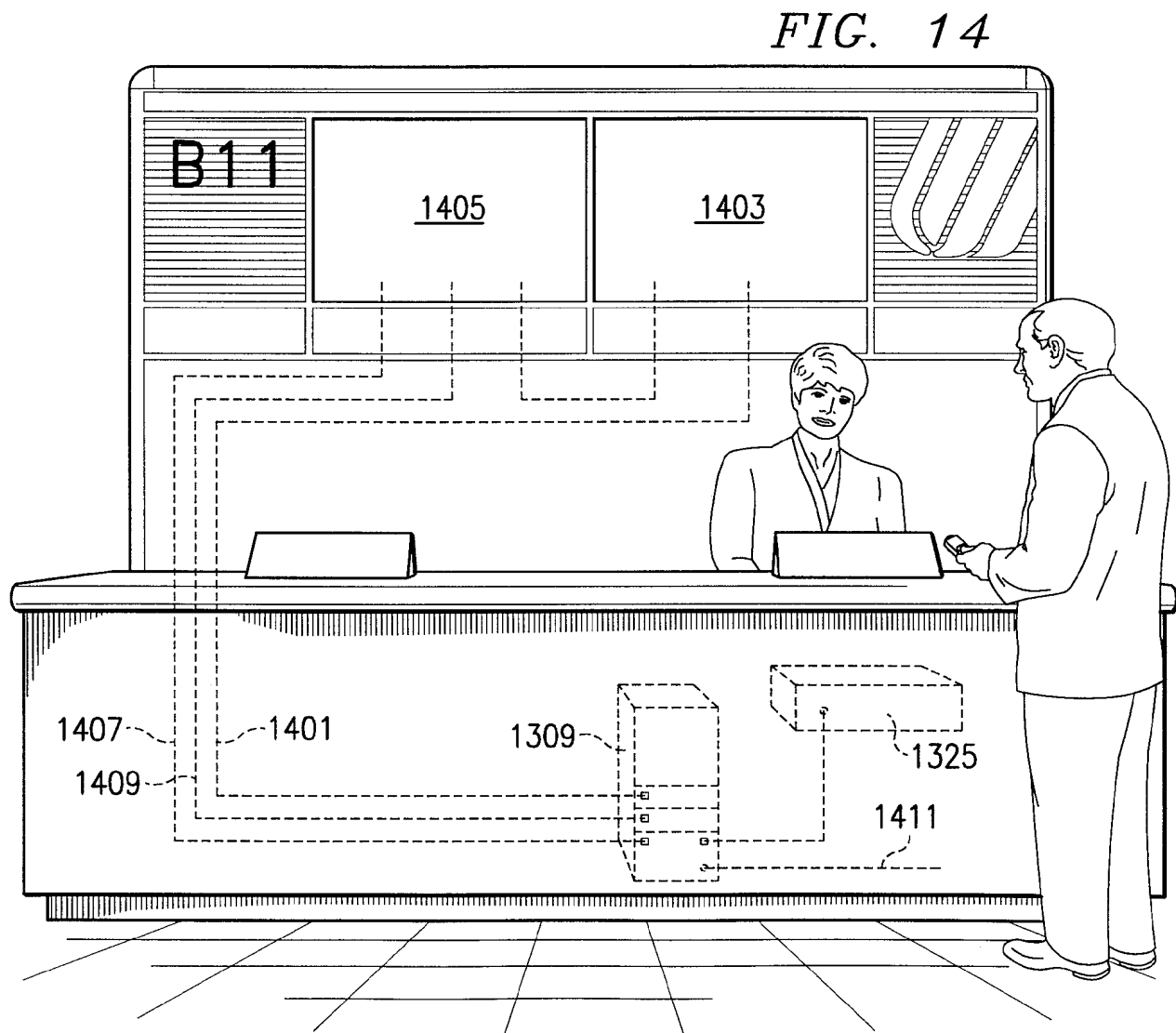
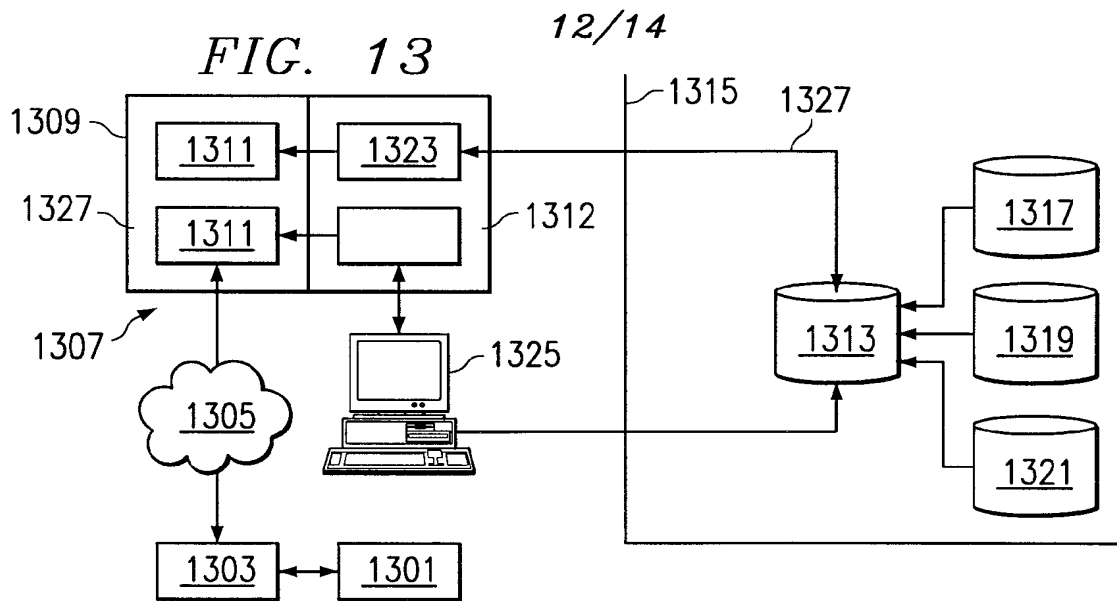
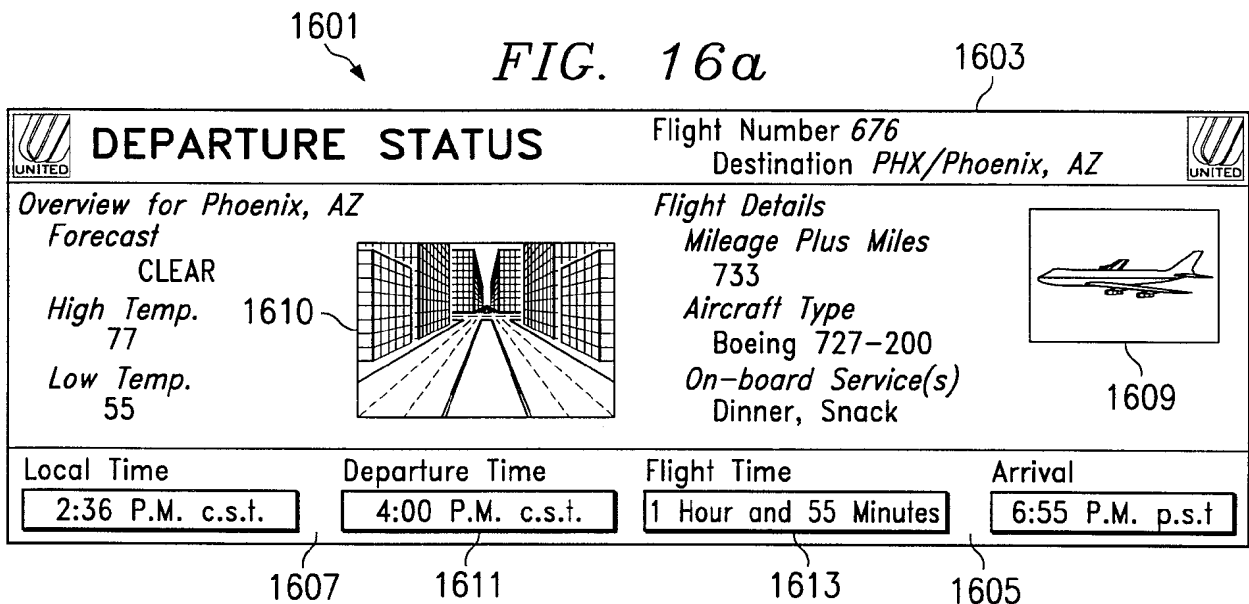
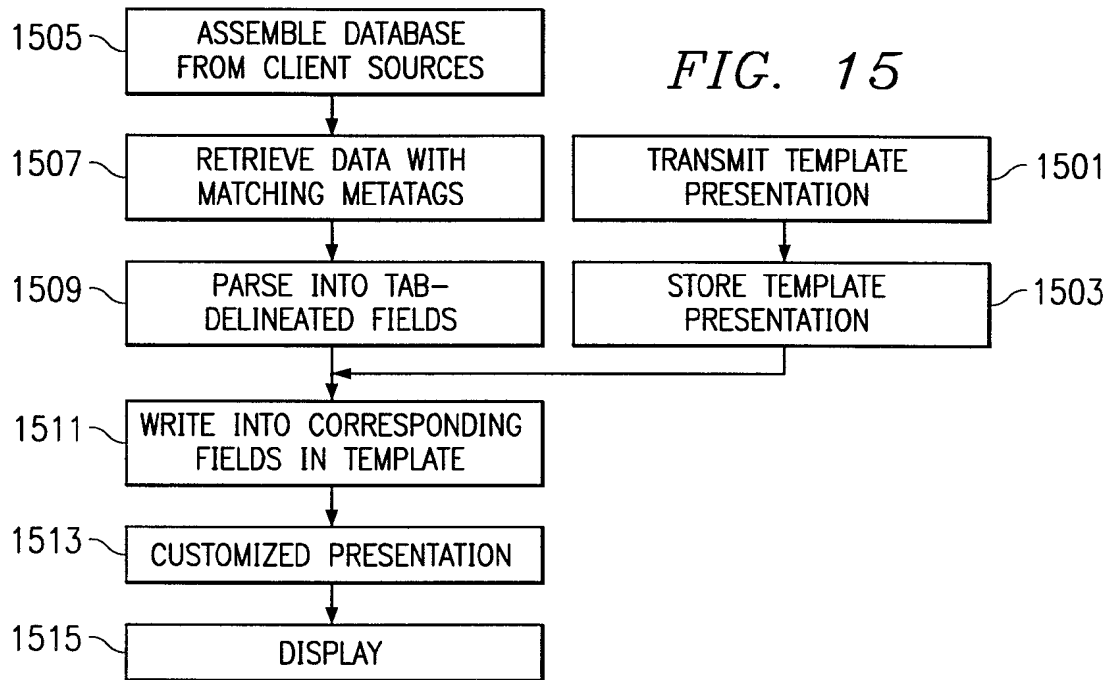


FIG. 12



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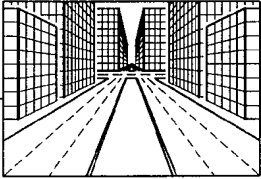




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FIG. 16b


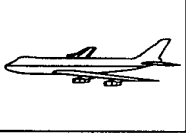
1603

DEPARTURE STATUS		Flight Number 676 Destination PHX/Phoenix, AZ	
<b>Overview for Phoenix, AZ</b> Forecast CLEAR High Temp. 77 Low Temp. 55		<b>Flight Details</b> Mileage Plus Miles 733 Aircraft Type Boeing 727-200 On-board Service(s) Dinner, Snack	
		 	
Local Time 2:36 P.M. c.s.t.		Departure Time 4:00 P.M. c.s.t.	
Flight Time 1 Hour and 55 Minutes		Arrival 6:55 P.M. p.s.t.	

1631

FIG. 16c

1603

DEPARTURE STATUS		Flight Number 676 Destination PHX/Phoenix, AZ	
<b>Overview for Phoenix, AZ</b> Forecast CLEAR High Temp. 77 Low Temp. 55		<b>Flight Details</b> Mileage Plus Miles 733 Aircraft Type Boeing 727-200 On-board Service(s) Dinner, Snack	
			
Local Time 2:36 P.M. c.s.t.		Departure Time 4:00 P.M. c.s.t.	
Flight Time 1 Hour and 55 Minutes		Arrival 6:55 P.M. p.s.t.	

# INTERNATIONAL SEARCH REPORT

International Application No.  
PCT/US 00/07326

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G06F17/30 G06F17/60

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, EPO-Internal, PAJ, INSPEC, IBM-TDB

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 53406 A (MATCHLOGIC INC) 26 November 1998 (1998-11-26) page 4, line 21 -page 5, line 10 ----	1,5,6,9, 16,20,24
X	EP 0 889 421 A (YAHOO INC) 7 January 1999 (1999-01-07) page 3, line 7 - line 39; figure 1 ----	1,5,6,9, 16,20,24
X	WO 98 31148 A (PREVUE INTERNATIONAL INC) 16 July 1998 (1998-07-16) abstract page 15, line 3 -page 17, line 6 page 13, line 31 -page 14, line 6; figures 1,3,9-11 page 28, line 27 -page 29, line 17 ----- -/--	1,5,9, 16,20,24

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

2 August 2000

Date of mailing of the international search report

09/08/2000

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Deane, E

# INTERNATIONAL SEARCH REPORT

Inter ☐ National Application No  
PCT/US 00/07326

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>WO 98 41936 A (FRANKEL &amp; COMPANY ;MANDEBERG RICHARD D (US); MOLESKI DESMOND C J () 24 September 1998 (1998-09-24) cited in the application abstract; figure 2A -----</p>	<p>1,5,9, 16,20,24</p>

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/07326

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9853406 A	26-11-1998	US 6014698 A AU 7498898 A	11-01-2000 11-12-1998
EP 0889421 A	07-01-1999	US 5983227 A AU 6991598 A WO 9857276 A	09-11-1999 17-12-1998 17-12-1998
WO 9831148 A	16-07-1998	AU 5726398 A EP 0950320 A	03-08-1998 20-10-1999
WO 9841936 A	24-09-1998	US 6038545 A AU 5913398 A EP 0985183 A	14-03-2000 12-10-1998 15-03-2000